SRI Education

Start Making! @ Clubhouses
Final Evaluation Report

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Photos

Unless otherwise noted, photos were provided courtesy of the Clubhouse Network. Cover photos were taken (from left to right) at SWICN in Dublin, Ireland; Casa de la Juventud Mora, Mora, Costa Rica; and Jordan Boys & Girls Club, Chelsea, MA.

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The Clubhouse Network
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Executive Summary

SRI International served as the external evaluator for The Clubhouse Network adaptation of Intel's Start Making! program. Start Making! is an open-ended learning program made up of six to eight sequential sessions of hands-on, STEM-rich[1] making activities for youth. The program is designed to serve as an introduction to an arts and engineering design cycle through making.

Drawing on data collected in 2014 and 2015, this report provides an overview of the Clubhouse Network implementation of Start! Making and presents evidence of program success — in the form of youth development outcomes for participants and increased local program capacity — as aligned with the four overall Start Making! goals.

The Start Making! sessions guide participants through structured projects using a range of high- and low-tech materials including digital interfaces like the Scratch programming language; basic electronic circuit components like batteries, LED lights, and motors; and tangible everyday materials like cardboard, paper and glue. Near the program's end, an Open Make session allows participants to combine skills and materials from different projects. The program culminates in a Show and Share event where participants reflect on and demonstrate projects to peers, family, and community members.

In 2014 and 2015, 38 Clubhouses around the world implemented Start Making! Almost 700 youth participated, attending an average of 4.4 sessions each. Over half of participants were girls. In most Clubhouses, the Start Making! sessions were divided over several weeks for 2-3 hours weekly.

A decorated paper circuit created during session 1 at Palestinian Child's Home Club, Hebron, West Bank.

Youth showing his 3D paper craft character at Puerta 18 Clubhouse in Buenos Aires, Argentina.

[1] STEM is science, technology, engineering, and mathematics. This report also uses the acronym STEaM, which incorporates art.

There was evidence that the Start Making! program was successful across all four of the initiative's goals in bringing about positive outcomes for youth and the organizations that serve them.

Goal 1. Technical Skills and Youth Development Outcomes

We explored evidence for youth development and technical skill growth aligned with the five creative competencies outlined in the Start Making! program design.

Creative competency 1. Identify as a creator or maker

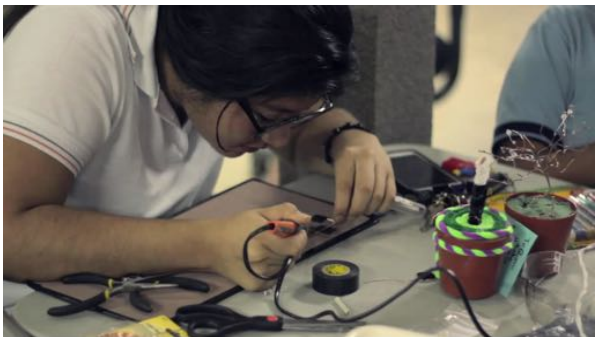
Clubhouse staff provided examples of youth self-identifying as makers through stories of participants recognizing their own capacities. Their examples were reinforced by the participant surveys, in which 93% agreed or agreed strongly with the idea that "If something doesn't work the first time, I try to fix it or try something different." Of those responding, 64% reported that they mixed ideas from other projects in a new project, and 88% reported that working on one project gave them ideas for another project in some or all sessions.

Creative competency 2. Confidence in creative expression

Clubhouse staff provided examples of youth working through creative endeavors and adapting projects to make them their own. In surveys, we asked participants about their degree of confidence in expressing themselves by making art. Of the respondents, 44% reported that they could do this by themselves and another 29% reported that they could do it and also teach others. We also asked participants whether they did things to make the projects their own during the Start Making! sessions. 84% reported that they did so in some or nearly all of the sessions. Similarly, 84% of respondents reported that during some or all projects they started with one plan but ended up revising their approach.

Creative competency 3. Technical tool literacy

In session descriptions, facilitators outlined details of how youth in Start Making! explored a wide range of technical tools. In youth participant surveys, we asked how well youth thought they could carry out a variety of tasks related to the Start Making! program, such as building circuits, sketching or mocking up an idea, or creating 3D models. Across all tasks, more than half of youth responding rated themselves as able to carry out the tasks independently or to do so and also teach others.



A participant soldering during an Open Make session at Casa de la Juventud Mora, Mora, Costa Rica.

Paper circuits in progress at Tecnocentro Somos Pacifíco, Cali Valle del Cauca, Colombia.

Creative competency 4. Awareness of STEaM

Each Start Making! session was designed with key STEaM content embedded. Progress reports and participant surveys documented several situations in which successful completion of an activity enhanced awareness of STEaM concepts. For example, when commenting on the challenges of a particular activity, one lead facilitator reported that to be successful, participants had to be attentive to STEaM concepts embedded in the activities.

Creative competency 5. Collaboration and networking

Start Making! activities provide opportunities for youth to collaborate both formally and in an ad hoc manner. Survey results suggest that Start Making! participants worked together in collaborations that served the projects well. Of survey respondents, 74% reported that in some, all, or nearly all of the sessions, they "worked with another maker and it changed the way the project turned out." When asked to rate their agreement with the statement "I do a better job when I work with others," 86% selected agree or strongly agree.

Goal 2. Youth Empowered to Share

The opportunities for informal collaboration in Start Making! can provide youth with the confidence and experience to talk about their work, guide newcomers, and even share their work publicly with the wider community. In surveys, 56% of respondents indicated that they planned to share something at a demo or showcase event, and 44% reported that they had already presented and demonstrated projects to others (even though surveys were usually administered before the Show and Share event). Of those responding, 72% described themselves as either able to present their work by themselves or to do so and teach others to do so as well.

A Start Making! participant works on an Open Make project during Start Making! for Girls, Flagship Clubhouse, Museum of Science, Boston.

Start Making! participants work during an Open Make session at Youth Connections in East Lismore, Australia.

Start Making! participants work together on a project.

Goal 3. Spirit of Documentation

Clubhouse lead facilitators and youth participating in Start Making! were encouraged to document their work throughout the process.

Many Clubhouses enthusiastically embraced the idea of showcasing participant work, inviting parents, community members, and others (e.g., board members) to Show and Share events. Clubhouses also documented their projects online on The Clubhouse Network's internal social media website, (www.ClubhouseVillage.org), public social media channels, and portfolio documentation platforms such as the MIT Media Lab's BuildInProgress web site (http://buildinprogress.media.mit.edu/) which supports documentation of the making process.

Start Making! lead facilitator discusses a project with a participant at Southeast and Armed Services YMCA.

Goal 4. Organizational Capacity

Hands-on making is a natural fit with The Clubhouse Network where youth have been engaging in interest-driven digital creation for over 22 years. The ongoing staff development of the entire Clubhouse Network aligns well with the principles of educational making. Start Making! enabled Clubhouses to integrate the engineering and design tools and techniques of the Maker movement into regular out-of-school programming. Start Making! provides staff members with the opportunity to begin a smooth transition to incorporating more hands-on engineering and design into their work. Start Making! Clubhouse host organizations reported enhanced capacity through increases in new youth members and volunteers, public recognition, and even new funding.

Introduction

The Intel Start Making! @ Clubhouses program introduces youth aged 10-15 to hands-on do-it-yourself engineering experiences. Start Making! is made up of six to eight sequential sessions that provide opportunities for youth to explore a wide range of materials and engineering design tasks while engaging in creative expression as a maker.

The Start Making! program defines "making" as the process of designing and building in hands-on activities that combine arts, crafts, engineering, music, performance, creative reuse, science, and technology.

The Start Making! program was developed by Intel Corporation as one of its many initiatives aimed at drawing young learners into STEM-rich learning opportunities. Start Making! focuses on five content areas:

1. Circuitry and electronics
2. Crafts: Fashion, textile, vinyl and paper
3. Microcontrollers and robotics
4. 3D design and printing
5. Coding

In Start Making!, lead facilitators are provided with a detailed guide and professional development on facilitation strategies for the structured sessions of individual and group activities.

After offering the structured project activity sessions, Clubhouse staff members facilitate an Open Make session in which the youth participants can choose among the materials and techniques they have worked with throughout the program to create personal projects. The program culminates in a Show and Share session for families, other community members, and partners to see and hear about the projects the youth have been creating during Start Making!

A participant with her light-up character at Thunderbirds Boys & Girls Club, Guadalupe, AZ.

A paper airplane with lights. Created by a youth participant at the Neve Yosef Clubhouse in Haifa Israel.

Participants at the Hennepin County Library Best Buy Teen Technology Center, Minneapolis, MN, work on paper circuits.

Photo of a completed soft circuit project. taken at Sorenson Unity Center, Salt Lake, UT, December 2014.

The 2014 cohort of Clubhouse facilitators was trained to carry out the Start Making! programming during a full-day meeting after the April 2014 Clubhouse Network Annual Meeting in Denver. Because 2015 programs were offered before the 2015 Annual Meeting, trainings in 2015 were offered virtually in the Network's ClubhouseVillage.org social network and MIT Media Lab's Unhangout platform (https://unhangout.media.mit.edu/). Facilitators from the 2014 cohort became peer mentors to the 2015 cohort facilitators.

Intel and The Clubhouse Network had four goals for offering Start Making! to The Clubhouse Network:

- ***Goal 1. Technical skills and youth development outcomes.*** Support the development of specific technical skills, as well as the youth development outcomes necessary to apply such skills.
- ***Goal 2. Youth empowered to share.*** Empower members to share what they learn with their communities/schools, as well as with their peers in their Clubhouses.
- ***Goal 3. Spirit of documentation.*** Foster a spirit of documentation, reflection, and sharing among both the youth participants and the adult facilitators.
- ***Goal 4. Organizational capacity.*** Build the capacity of youth development organizations such as the Clubhouses to host and facilitate make programs that meet the needs of underserved populations.

As evaluators, we relied on four main sources of data—collected before, during, and after the programming—to understand how the program was implemented and to what extent Start Making! had met the four goals.

Girl working on 3D paper craft character at Tecnocentro Somos Pacifíco in Cali Valle del Cauca, Columbia.

The main data sources for the evaluation were: (1) facilitator progress reports completed using online forms with information about how the program was implemented and the youth outcomes observed; (2) participant surveys completed by youth as they neared the end of the programming, describing experiences before and during Start Making!; (3) discussions with Clubhouse lead facilitators held as part of regular group meetings in MIT Media Lab's Unhangout platform and during in-person visits to local Clubhouse locations; and (4) archives of participant projects shared by Clubhouse lead facilitators and often posted online in the Clubhouse Village or on public social media.

This report highlights findings on 38 Start Making! programs implemented in 2014 and 2015, in 15 different countries with the support of Intel. Overall, Intel granted 56 making-related grants from 2013 to 2015 to Clubhouse Network members[2]. Our findings here indicate that participating Clubhouses are demonstrating success in all four of the Start Making! goals.

Paper circuits in progress at Boys & Girls Club of Hudson County Best Buy Teen Tech Center, Jersey City, NJ.

A mentor helps a youth participant with a paper circuit at Sorenson Unity Center, Salt Lake City, UT.

[2] ; Four awards were granted in 2014-15 to pilot the Start Making! program design. Two of the remaining Clubhouses granted Start Making! support plan to implement by end of 2015. One Clubhouse was granted an award but left The Clubhouse Network before implementing Start Making!

The Start Making! Program

Intel first designed Start Making! activities as accessible entry points for youth to spark their interest in hands-on engineering projects in formal education and in public events such as Maker Faires. The first iterations of Start Making! aimed to instill among participants a sense of identity as makers.

The first Start Making! program activities were piloted in museums, Maker Faires, and other public events where drop-in participants built individual and group projects such as conductive circuit musical instruments using Makey Makey boards or light paintings. In The Clubhouse Network adaptation, individual projects were placed in a sequence of eight sessions combining activities that support building technical skills with opportunities for creative expression.

Start Making! sessions introduce participants to a wide variety of materials, approaches, and concepts. The sessions that make up the Start Making! program are described on pages 10 and 11. Each session is described in detail in the Start Making! Facilitation Guide[3], to be published by O'Reilly Media in early 2016.

During each session, a series of well-defined steps are carried out to complete a project, with opportunities for the youth participants to embellish it, adapting project steps and mixing approaches from other sessions to make the work their own. Participants often combine elements of different activities, with particularly rich examples taking place during Open Make sessions when participants are encouraged to use tools of their own selection while working on projects of personal interest.

The Start Making! facilitation guide in use.

[3] The final title of the facilitation guide is to be determined.

The Start Making! Program Sessions

Overview of all Start Making sessions based on July 2014 Facilitation Guide[1].

Connect: Learn the basics of electrical circuits and get to know your fellow makers.

1. Light It Up Paper Circuits
In this session, youth create custom lights controlled by simple switches (see photo).

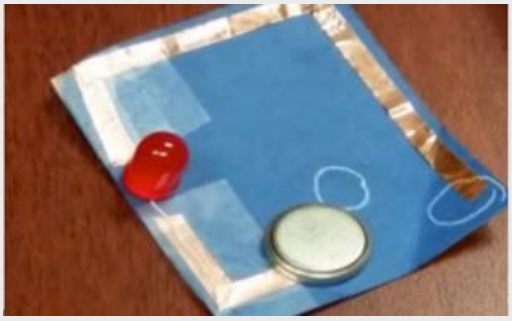
Play: Explore your interests and passions and dive into science concepts like conductivity and light. Get your hands dirty with technologies or materials or coding.

2A. Make It Sing - Sketch It, Play It
Session 2A is an introduction to physical computing and and the Makey Makey[2], an open-ended tool that allows anything to be connected to a computer by USB interface. Participants explore different approaches to controlling a computer using the Scratch programming environment[3] and conductive materials connected to Makey Makey.

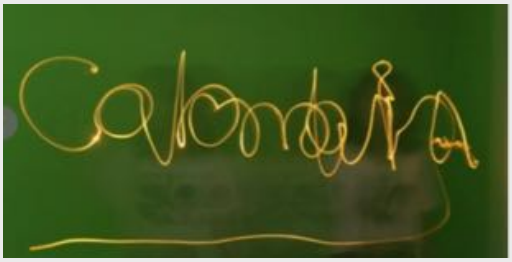
2B. Paint with Light - Light Up & Paint
Session 2B is an introduction to light ad art through drawing with LEDs. Participants use delayed-exposure photography with bright lights in dark rooms to capture trails of light and explore properties of light (see photo).

Build: Bring an idea from shape to form, then jump from one medium or tool to another.

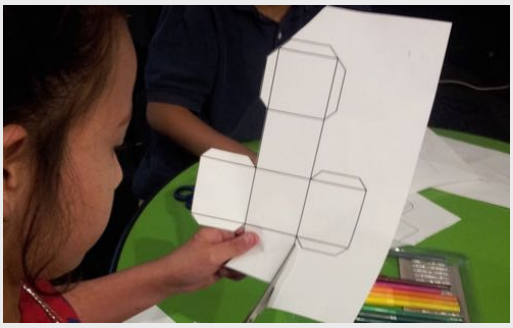
3. Give It Form - 2D <-> 3D Paper Craft.
Session 3 introduces 3D spatial design and construction. Participants plan, build, and create a their own digital sculpted character (see photo).



A paper circuit with switch at Gum Springs Community Center, Arlington, VA. Source: Video screen capture by Clubhouse staff.



Light painting at Cali Valle del Cauca, Colombia.



3D paper craft project at Tecnocentro Somos Pacifíco, Cali Valle del Cauca, Colombia.

[1] Session names may change in an upcoming published version of the Facilitation Guide.

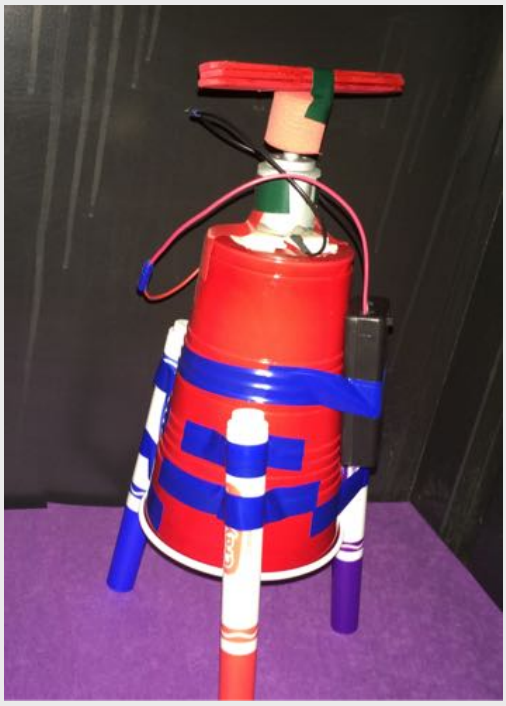
[2] For more information on the Makey Makey, visit http://makeymakey.com/.

[3] For more information on Scratch, visit https://scratch.mit.edu/.

Remix: Take it apart, repurpose it for something fun or functional, combine design, crafting, interactive robotics and microcontrollers.

4A. Change the Move - Scribble Machine
This session is an introduction to hacking, remixing, and reverse engineering. Participants repurpose components of everyday items (such as toothbrush motors) to create and customize artbots, machines that draw on paper (see photo).

4B. Soft Circuits
Session 4B introduces soft circuits by having participants design and sew a simple circuit within a wearable cloth product such as a wristband. Participants use LilyPad Arduinos, a set of sewable electronic devices such as battery holders and LED lights that can be connected with conductive thread to create fabric projects[4].



An example of a scribble machine of the type developed in session 4A.

Open Make: Take everything you've learned, add something new, collaborate with other makers, and put it all into a personal project.

Session 5. Open Make
This session features individual or group youth-led projects, based on their interests, using the basic concepts, materials, and techniques explored in prior sessions.

Show and Share: Tell a story. Document, reflect, demo, and present your work. Get feedback and make others excited about creating.

Session 6. Show and Share
This event features final project demonstrations for friends, family and community members in the Clubhouse spaces, at a booth at a local Maker Faire, or at another community setting (see photo).

Show and Share event at Fe y Alegría Clubhouse, Panama City, Panama.

[4] For more information on LillyPad, visit http://lilypadarduino.org/.

The 2013 Start Making! for Girls Pilot

Intel supported implementation of Start Making! program adaptations in the Clubhouses through several phases. The first program pilots were offered in 2013 at the Flagship Clubhouse at Museum of Science, Boston and four other Clubhouses in the United States. Each site offered activities for girls age 10-15. SRI supported an evaluation of the Start Making! pilot in which the following youth outcomes were reported:

- Almost every participant completed the program, attending all the sessions and engaging fully.
- The girls had new and exciting opportunities to engage in circuitry and related topics and demonstrated a practical understanding of underlying principles.
- Sewing and working with their hands, which were new activities for most of the girls, created special bonds among them, much like those that characterize sewing circles.
- Girls were excited by possibilities for connections to activities and events, which both supported and inspired them to take next steps.
- Staff members developed new capabilities and understanding of the types of activities that motivate and engage girls.
- The girls and their families thoroughly enjoyed the program and felt it was very valuable.

Outcomes from the pilot initiative played a role in planning the larger scale Start Making! @ Clubhouses initiative in 2014 and 2015.

A girl shows off a paper circuit project created in Start Making! for Girls at the Flagship Clubhouse, Museum of Science, Boston.

Youth participant working on a motorized pinwheel at Casa de la Juventud Mora, Mora, Costa Rica.

Start Making! in 2014 and 2015

The 2014–2015 initiative expanded the program to implementation of Start Making! in 38 Clubhouse locations around the world. Start Making! in The Clubhouse Network is part of a larger Intel Making! @ Clubhouses initiative that includes Keep Making! fellowships for Clubhouse staff who are more experienced with making. The Start Making! program was targeted specifically to Clubhouses where experience with hands-on making was limited. Clubhouses applied to take part in the initiative, and accepted Clubhouses were assigned to one of the two cohorts (2014 or 2015). Each Start Making! participating Clubhouse agreed to engage at least 15 youth aged 10 to 15 in the Start Making! program.

On April 11, 2014, after the Clubhouse Network Annual Conference in Denver, lead facilitators from the 2014 cohort took part in a full-day workshop on the program design and program facilitation techniques. The lead facilitators were introduced to the Start Making! program sessions through hands-on activities and reflective discussion. Each Clubhouse received a copy of the Start Making! facilitation guide, received additional resources on educational making, and took part in discussions on documentation and on building connections with the larger maker community. An SRI evaluator was present as an observer at the workshop.

Because many Clubhouses in the 2015 cohort planned to implement the program before the April 2015 Clubhouse Network Annual Conference, training was carried out virtually. Rather than a full-day online session, the virtual training was through several synchronous online sessions using the MIT Media Lab's Unhangout platform scheduled to accommodate a range of time zones. The sessions were recorded and shared on the ClubhouseVilage.org website for lead facilitators who were not able to attend live. An SRI evaluator attended the first of the live sessions.

Start Making! facilitator training in progress at the end of the 2014 Clubhouse Annual Conference in Denver, CO.

Screen capture of a recorded virtual training session.

Both cohorts were invited to participate in additional Unhangout sessions before, during, and after the implementation of the Start Making! program. During these sessions, lead facilitators talked about plans for carrying out

the program, recruitment of youth participants, challenges faced during implementation, and observations about the implementation and outcomes of the program. SRI researchers were able to attend many of these sessions hearing firsthand from facilitators about recent experiences with the program.

After the training, participating Clubhouses received their grants, items lists, and other materials needed to carry out the program and participate in the evaluation (e.g,. links to online reporting). Clubhouses could choose the format for their programs (e.g., summer camp, vacation camp, afterschool) and any specialized recruitment approaches (e.g., girls only) that best met local needs.

Throughout 2014 and 2015, nearly 700 youth participated in Start Making! at 38 Clubhouse locations around the world. An overview of the scale and reach of the Start Making! program in 2014 and 2015 can be found in appendix A.

Program Goals for Start Making!

The Making! @ Clubhouses initiatives, including Start Making!, aim to produce changes in both the youth participants and in the capacities of the Clubhouses. The four goals of the program are:

- ***Goal 1. Technical skills and youth development outcomes.*** Support the development of specific technical skills, as well as the youth development outcomes necessary to apply such skills.
- ***Goal 2. Youth empowered to share.*** Empower members to share what they learn with their communities/schools, as well as with their peers in their Clubhouses.
- ***Goal 3. Spirit of documentation.*** Foster a spirit of documentation, reflection, and sharing among both the youth participants and the adult facilitators.
- ***Goal 4. Organizational capacity.*** Build the capacity of youth development organizations such as Clubhouses to host and facilitate make programs that are inclusive to underserved populations.

Youth connect artwork to a computer using the Makey Makey at CEDES in San José, Costa Rica.

The evaluation findings in this report are aligned with the program goals. Data on youth's experiences with the program are associated with Goals 1, 2, and 3. Data on the organizational capacity of Clubhouses (e.g., related to professional growth among lead facilitators or an institutional culture of documentation) are linked to goals 3 and 4.

Approaches to Documentation and Evaluation

In evaluating the Start Making! initiative across The Clubhouse Network in 2014 and 2015, SRI documented progress on the four program goals listed above by relying on four main sources of data. The data were collected with the help of staff of The Clubhouse Network as well as lead facilitators and facilitators from participating Clubhouses. Data sources are listed below.

1. ***Facilitator progress reports.*** Facilitators of Start Making! programs were required to complete online progress reports as information became available. Progress reporting forms included requests for information about the dates of the program, the sessions offered, participation data for each of the sessions, and open-text response items describing the recruitment methods and other details of program implementation. The progress reports also included tables for providing details about each session offered, examples of participant projects, and examples of participant success stories from Start Making! at the Clubhouse. Facilitators from Clubhouses submitted the progress reports.

2. ***Participant surveys.*** SRI administered surveys (available in English and Spanish) to youth participants in the Start Making! program that included topics such as experience with hands-on making and with the materials used in the Start Making! program, Clubhouse membership, and self-efficacy with respect to the skills and knowledge required of a maker. Clubhouse coordinators and staff were responsible for providing participants with the time needed to complete the survey and computers for doing so. We received 238 completed surveys from program participants, 174 from the 2014 cohort and 61 from the 2015 cohort.

Screen capture from the online progress reporting form for participating Clubhouses.

Screen capture from the English version of the online participant survey form.

3. ***Discussions with Clubhouse lead facilitators.*** In 2014 and 2015, staff members of The Clubhouse Network organized a number of online meetings, hosted in Google Hangouts, for facilitators to discuss their programs; SRI researchers participated in several of the meetings. In the process, we learned about the aspects of the program design and projects that were new experiences or especially interesting for new Clubhouse youth and mentor makers, as well as the challenges facilitators faced when carrying out the program and the kinds of evidence of success facilitators were seeing in their Clubhouses. SRI evaluators also visited two Clubhouses in the Bay Area during Start Making! programming in 2014. In addition to the program observations themselves, those visits provided opportunities to connect with Clubhouse staff members engaged in the day-to-day implementation of Start Making!

4. ***Archives of participant projects.*** Although one of the principles of portfolio development—that a portfolio include work exemplars collected over a long span of time—is not usually possible within the relatively short Start Making! program, one aim of the program is to foster documentation habits and to initiate the process of portfolio collection. The Clubhouse Network led a discussion on creating portfolios during the April 2014 training workshop and emphasized documentation throughout the 2015 training. SRI sought to support documentation efforts by supplying templates and question prompts for portfolio creation. Through progress reports and other communications with Clubhouse staff, SRI obtained links to examples of student projects, many of which are posted online in the secure ClubhouseVillage.org website available only to Clubhouse staff and participants.

We analyzed all evaluation data sources independently, calculating descriptive statistics on each of the multiple-choice survey and progress report items. We carried out analysis on open-ended survey and progress report items using different coding frameworks for each item.

The remainder of this report describes findings based on the data collected across all participating Start Making! Clubhouses in 2014 and 2015. Results reported here are organized according to the four Making !@ Clubhouses goals.

Exhibit 18. Youth working together with Makey Makey and Scratch at the Sci-Bono Clubhouse in Johannesburg, South Africa.

Findings Concerning Program Implementation

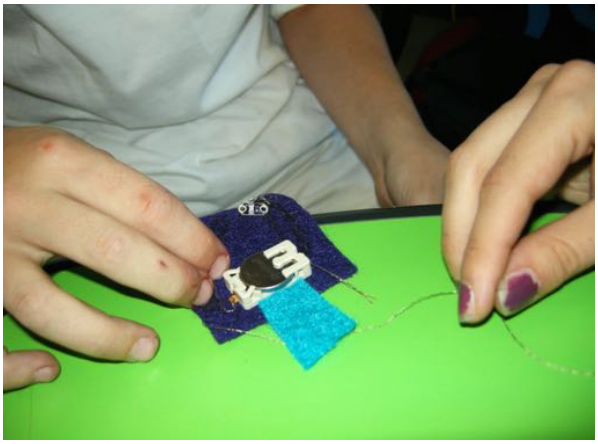
This section describes what we have learned about how Start Making! was implemented in participating Clubhouses in 2014 and 2015.

The focus of the evaluation was on youth and the Clubhouses that serve them, the details of how the program was implemented, and how implementation varied across the Clubhouse locations. All four data sources, particularly the survey and progress reports, contributed to our understanding of how Clubhouses implemented Start Making! Together, they provided evidence of a breadth of approaches to offering the Start Making! program and provide a context for understanding program impacts on participating youth and Clubhouses.

In this section, we refer to the youth participant survey responses. For more information, responses from a sample of survey items are included in Appendix B. We also refer to documentation of Start Making! work posted online and linked within the progress reports. Appendix C provides links to some examples of this documentation.

Start Making! participants used a variety of materials in and across activities, mixing high- and low-technology tools in ways that allowed extensive customization and creativity. In many Clubhouse sites, participants used such diverse tools and approaches as computer programming, paper craft, and modeling clay.

Participants work with a motorized artbot at Tecnocentro Somos Pacifíco, Cali Valle del Cauca, Colombia.



Participants use conductive thread to sew a battery into a textile project at Sorenson Unity Center in Salt Lake City, UT.

While Start Making! incorporates many opportunities for customization in the program sessions, Clubhouses also had the option to customize the Start Making! experience to the needs and interests of their communities by adding or extending sessions. In progress reporting, 17 of the 38 Clubhouses reported offering at least one program session of their own design. The additional sessions included such projects as the creation of flashlights

using Altoids brand mint boxes, soldering activities, creating handcrafted lamps, building a light-up Christmas tree, making a rollercoaster model, and constructing air-powered machines.

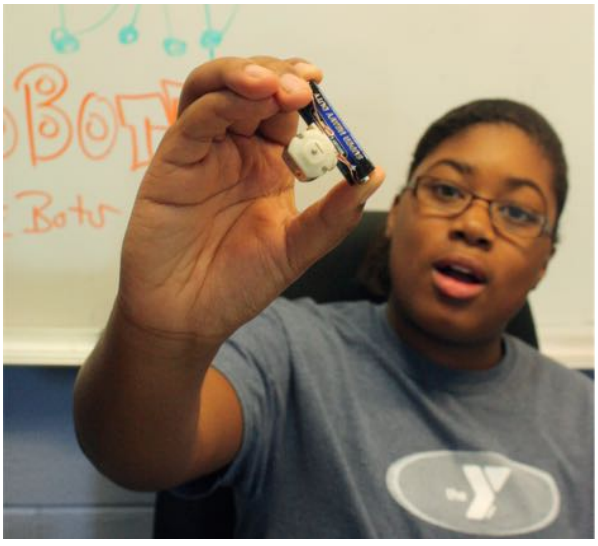
In progress reports, lead facilitators reported they undertook a range of activities to prepare for offering Start Making! at their Clubhouses. Lead facilitators reported researching materials and material vendors, researching maker activities on websites such as Instructables (www.instructables.com), reading maker books, recruiting and training volunteers, talking with local mentors familiar with making, and trying out activities themselves or with groups of Clubhouse members before attempting them with a group.

Youth Participants and Recruiting

There were almost as many strategies for recruiting participants to the Start Making! program as there were Clubhouses. Some Clubhouses recruited from within their host organizations, some reached out using existing networks (e.g., regular events, Facebook), and some recruited through their regular members or local schools.

Participant survey respondents ranged in age from 9 to18. The mean age was 12.4. Facilitators' estimates in the progress reports indicated that 51% of program participants were girls. This number is consistent with the 56% of participant survey respondents who were girls and far exceeds the percentage of Clubhouse members who are girls, which for the past 2 years of reporting has been between 41% and 45%. Six Clubhouses elected to offer the program for girls only. Four other programs described recruitment approaches aimed at attracting more female members into hands-on engineering programs and regular Clubhouse programming as well.

Although only 35% of participant survey respondents reported that they were new to the Clubhouse, nearly all Clubhouse lead facilitators reported recruiting a mixture of existing Clubhouse members and youth new to the Clubhouse; 65% of survey participants (149) identified themselves as current Clubhouse members. Of the participants who were members before Start Making!, 75% (112 participants) were recent members, having joined the Clubhouse since 2013. Of all survey respondents, 44% (103 respondents) reported that they normally visited the Clubhouse every day that it is open. Another 24% (55 respondents) reported visiting one or two times each week.



A participant showing a motor connected to a battery at Southeast and Armed Services YMCA, Colorado Springs, CO.

Participants of a wide range of ages at Southeast and Armed Services YMCA, Colorado Springs, CO.

Youth paint with light at Puerta 18 Clubhouse in Buenos Aires Argentina.

Participants making motorized artbots at Tecnocentro Somos Pacifíco, Cali Valle del Cauca, Colombia.

For some Clubhouses, the Start Making! program was an opportunity to attract new members. According to one Clubhouse leader's progress report, "Start Making! has brought new female members but also has motivated previous members to stay in touch with the Clubhouse." Five Clubhouse facilitators mentioned that new members were targeted in recruitment, and three mentioned that Start Making! has impacted overall Clubhouse recruitment. Reporting indicated that youth who began attending Clubhouse programs with Start Making! could become (or plan to become) continuing Clubhouse members.

Exhibit 1 on pages 20 and 21 provides an overview of the Clubhouses that participated in Start Making! in 2014 and 2015 along with estimates on the participant numbers for each site based on leader estimates and optional participant rosters (where provided). The exhibit also provides information on the format for programming at each Clubhouse.

In addition to the Clubhouses listed in Exhibit 1, two additional sites — Fitzroy Learning Network in Fitzroy, Australia and Bellavista Clubhouse in Johannesburg, South Africa — were awarded Start! Making grants and plan to implement the program in the last quarter of 2015.

Exhibit 1. Overview of Start Making! Programming. Participation Data Collected From Progress Reports[1].

Clubhouse Name and Location	Participants[1]	Girls (%)	Facilitators	Program Format
2014 Clubhouses				
Awa City, Whanganui, New Zealand	10	100%	3	2 full days (w/ sleepover)
Beaverton PAL, Beaverton, OR	18	N/A	1	2-3 sessions weekly
Boys & Girls Club of Metro West, Framingham, MA	24	54%	4	2-3 sessions weekly
Casa de la Juventud Mora, Mora, Costa Rica	14	100%	5	2-3 sessions weekly
East Palo Alto Boys & Girls Club, East Palo Alto, CA	11	100%	1	2-3 sessions weekly
Fe y Alegría, Panama City, Panama	18	56%	8	3-day program
Gum Springs Community Center, Alexandria, VA	16	50%	4	2-3 sessions weekly
La Alameda Plaza, Walnut Park, CA	15	67%	3	2-3 sessions weekly
Listo America Santa Ana, Santa Ana, CA, USA	22	50%	4	N/A
Palestinian Child's Home Club, Hebron, West Bank	30	67%	10	1- week program
Puerta 18, Buenos Aires, Argentina	13	15%	N/A	2-3 sessions weekly
Sacramento Food Bank & Family Services, Sacramento, CA, USA	19	58%	5	1- week program
Sci-Bono, Johannesburg, South Africa	15	20%	20	1- week program
Sorenson Unity Center, Salt Lake City, UT, USA	11	45%	4	2-3 sessions weekly
Southeast and Armed Services YMCA, Colorado Springs, CO, USA	21	48%	3	2-3 sessions weekly
South San Francisco Boys & Girls Club, South San Francisco, CA, USA	46	39%	4	2 hours daily in summer camp
SWICN, Dublin, Ireland	25	64%	5	2-3 sessions weekly
Thunderbirds Branch Boys & Girls Club, Guadalupe, AZ, USA	14	64%	1	2-3 sessions weekly
Willston Multicultural Center, Falls Church, VA, USA	13	77%	5	3-day Program
YWCA Of Greater Miami, Miami, FL, USA	21	48%	8	2-3 sessions weekly
Zabota, Nizhny Novgorod, Russia	20	8%	1	N/A

Clubhouse Name and Location	Participants[1]	Girls (%)	Facilitators	Program Format
2015 Clubhouses				
Boys & Girls Club of Hudson County Best Buy Teen Technology Center[2], Jersey City, NJ, USA	22	36%	4	1 session per week
CEDES, San José, Costa Rica	11	36%	10	1 session weekly (Saturdays)
Christian Activity Center East St. Louis, IL, USA	13	54%	3	6 days after school (early release days)
CLT, Bangalore, India	15	33%	3	N/A
EXPO Center, Los Angeles, CA, USA	23	65%	2	1 session weekly (Saturdays)
Family Services Association of San Antonio Best Buy Teen Technology Center, San Antonio, TX, USA	11	100%	5	1- week program
Grand Street Settlement, New York, NY, USA	24	50%	6	1 session per week
Hennepin County Library Best Buy Teen Technology Center, Minneapolis, MN, USA	20	35%	7	1 session per week
Jardim Conceição, Osasco, Brazil	15	53%	3	2-3 sessions per week
Jordan Boys & Girls Club, Chelsea, MA, USA	14	57%	4	5 sessions per week
Neve Yosef, Haifa, Israel	20	45%	7	2-3 sessions per week
Odense, Odense, Denmark	22	45%	4	1- week program
Parroquia de Fátima, Ciudad de Panamá, Panama	18	50%	8	1-2 sessions weekly
South Boston Boys & Girls Club, Boston, MA	7	43%	2	1 session per week
Tecnocentro Somos Pacifíco, Cali Valle del Cauca, Colombia	16	60%	3	2-3 sessions weekly
WYTEC, Chicago, IL, USA	15	66%	3	2-3 sessions weekly
Youth Connections East Lismore, NSW, Australia	25	32%	6	2-3 sessions per week
Total / average across all Clubhouses	**687**	**51%**	**179**	

[1] Participation data are approximate. Where participant tracking was provided, we used this information to estimate the number of participants. Otherwise we used summary data provided by Clubhouse lead facilitators.

[2] Best Buy Teen Tech Centers are program sites sponsored by Best Buy which utilize the Clubhouse learning model and are members of the global Clubhouse Network.

Program Format

The Start Making! program design allows for several program formats, both intensive and extended over time. Clubhouses were encouraged to carry out the sessions in the format that best suited their audience's needs, their staffing abilities, and other local concerns.

The most common format was to offer the Start Making! sessions two to three times per week over several weeks. Some Clubhouses (6) condensed the Start Making! experiences at summer camps and in other settings to offer the entire program in 5 days or fewer such as in a 1-week summer or vacation camp. Exhibit 2 indicates the program formats used across all participating Clubhouses.

Exhibit 2. Overview of Start Making! program formats.

Program Format	No. of Clubhouses
2-3 sessions weekly	14
1 week program	6
1 session per week	4
2-3 sessions per week	3
1 session weekly	2
3-day program	2
1-2 sessions weekly	1
2 full days	1
2 hours daily in summer	1
6 days after school	1
Not available	3
Total	**38**

Connections with Local Maker Faires

Start Making! programs at seven Clubhouses made connections with local Maker Faires in various ways. In some cases Start Making! youth participants attended the faires as visitors, and in other cases they showcased work or even helped facilitate visitor activities.

- Sci-Bono Clubhouse in Johannesburg, South Africa, hosted a Community Showcase for its participants and their families, and offered opportunities to visit the city wide Maker Faire.
- Willston Multicultural Center in Falls Church, VA showcased its participants' projects as part of both the DC Maker Faire and the U.S. Science and Engineering Festival.
- SWICN in Dublin, Ireland featured participant work, including artbots, at the local Maker Faire. It also hosted a popular table at which Maker Faire visitors could make their own artbots.
- Southeast and Armed Services YMCA in Colorado Springs, CO, hosted a booth showcasing elastic catapults, bristle bots, and artbots.
- Hennepin County Library Best Buy Teen Tech Center in Minneapolis planned a booth for Start Making! participants to showcase projects. It also facilitated a Start Making! activity based on Session 3 from the program with the hope of recruiting new participants.

A bulletin board at the South San Francisco Boys & Girls Club shows the work of Start Making! participants.

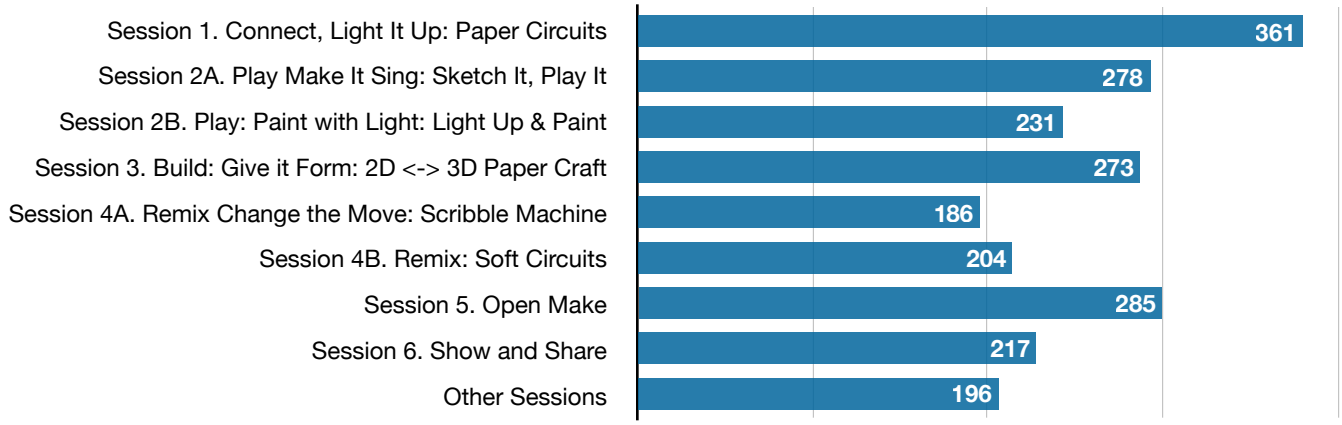
- In Odense, Denmark, Start Making! students attended the local Maker Faire. On the day before the faire, facilitators offered making activities to students from local schools.
- A group of participants from Grand Street Settlement, New York presented on use of the Makey Makey at the World Maker Faire in New York.

These connections with local Maker Faires suggest that Clubhouse members and facilitators are becoming part of the broader community of makers. It also suggests that Clubhouses participating in Start Making! are embracing a spirit of documentation and sharing.

Youth Attendance and Session Participation

In the progress reports, Clubhouse lead facilitators could provide optional attendance data for each session of the Start Making! program. Of the 38 Clubhouses that implemented Start Making! programs, 27 provided participation records on individual participants. Participation records indicated that 507 participants attended a total of 2,231 sessions of programming. On average, participants attended 4.4 sessions each. Exhibit 3 shows details of participation in individual Start Making! sessions.

Exhibit 3. Number of Youth Participants in Each Session of Start Making! in 2014 and 2015 Based on Optional Participation Reporting in Progress Reports.



Implementation of Individual Sessions

In addition to the general data that program lead facilitators provided on program structure and attendance, SRI collected extensive data in progress reports on how each of the sessions was carried out and what challenges Clubhouses faced in each session. We list these details below.

A participant with her completed paper circuit at Gum Springs Community Center in Alexandria, VA.

Session 1. Connect: Light It Up Paper Circuits

Overall, facilitators reported that session 1 went well, entailed few challenges, and resulted in high interest and enthusiasm among participants. One Clubhouse leader noted that this was a great introduction to the program and to making. Another leader referred to participants as "circuitry crazed!" after the session. Challenges included facilitator uncertainty about whether to step in and explain the basics of circuitry or to allow participants to explore on their own. Several sites also reported difficulty with some faulty LED lights.

Session 2A. Play: Make It Sing - Sketch It, Play It.

Clubhouses reported widely varying prior participant experience with both Makey Makey and Scratch, but the reports suggested that both new and experienced users profited from initial or renewed exposure to the tools. One Clubhouse did report "overexposure" to the Makey Makey; participants there were familiar with the tool and not as interested in working with it. Experience programming with Scratch varied among participants. In one case where participants were new to Scratch, the facilitator stressed the importance of introducing the programming before running the session. This idea was consistent with the remarks of two other facilitators who were concerned that they lacked time to familiarize participants with both Makey Makey and Scratch. Challenges reported in session 2A included difficulty with physical connections, the logistics of shared equipment (e.g., the need for taking apart one participant's project to allow another to use the Makey Makeys). In addition, many Clubhouses reported they required more time than allotted to complete this activity.

A participant connects conductive art to a Scratch program using the Makey Makey at Boys & Girls Club of Metro West, Framingham, MA.

Participants paint with light at the Fe y Alegría Clubhouse in Panama City, Panama.

Session 2B. Play: Paint with Light - Light Up & Paint.

Lead facilitators reported that participants liked this activity and that in most cases it worked well despite some difficulty with recording the images. Several facilitators reported that youth wished to spend more time than allotted to complete activities in this session. Some challenges facilitators reported underscore the learning opportunities in the activity. For example, some participants struggled to understand what was happening when their light paintings became washed out. They did not immediately realize why small and relatively dim lights would appear so bright bright using long exposure photography. The difficulty getting light paintings to appear as desired made some youth consider the science behind how photography and the human eye differ. Some facilitators reported logistical challenges as well, such as getting the right camera settings and controlling ambient light during daytime sessions.

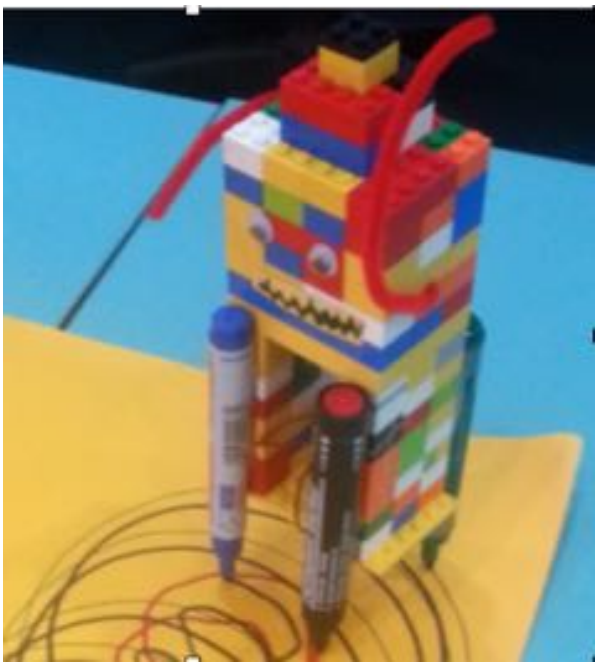
Session 3. Build: Give It Form - 2D <-> 3D Paper Craft.

Facilitator progress reports supported the idea that a 3D printer is not needed to challenge youth to think in three dimensions. Design in 3D may, however, be difficult to carry out in short activity sessions. Many Clubhouse lead facilitators reported that Session 3 was challenging for youth. Some reported that participants were relatively surprised at the complexity of modeling in three dimensions—a finding that is consistent with youths' self-reports in the surveys. When asked how well they could perform certain tasks, the option "Build 3D art or models" had the lowest percentage of high ratings (only 50% of youth claimed they could do this alone or teach others). Some facilitators reported that this session posed challenges in engaging students. Although youth in some Clubhouses readily engaged in the activity, other lead facilitators found it difficult to elicit the interest of participants. Because the activities were challenging to many participants, completing all stages of the session was not always possible in the available time.

A lead facilitator works on 3D paper craft at the Start Making! training session in Denver, CO in April 2014.

Session 4A, Remix. Change the Move - Scribble Machine.

Facilitator comments suggested that youth in several Clubhouses found this session very engaging. Facilitation challenges largely related to difficulty with the actual construction such as getting pieces to stay together and balancing the weight of the scribble machines. These kinds of challenges were most likely connected to the high level of participant exploration and trial and error that facilitators reported. This session was often customized to adapt materials based on local availability, for example, by harvesting motors from low-cost vibrating toothbrushes or hand fans or by purchasing motors and switches in bulk.



Adaptation of Scribble Machine from session 4A using LEGOs created at the Palestinian Child's Home Club, Hebron, West Bank. Source: http://www.clubhousevillage.org/projects/59030.

Session 4B. Remix: Soft Circuits

Creating working soft circuit projects was challenging for many participating youth. Facilitators reported that in some cases this was because participants did not have prior experience sewing. In other cases the challenges related to putting the principles of circuitry into practice — for example, taking care not to cross the conductive thread while sewing. This session took far longer to complete than many of the other sessions. One Clubhouse dedicated an entire week to it, and many lead facilitators commented that participants did not have time to complete projects or that more time was needed to make this a successful project. One common challenge facilitators noted was that youth who did not know how to sew were frustrated when projects did not come out as planned.

A participant shows a completed soft circuit at Sorenson Unity Center in Salt Lake City, UT.

Session 5. Open Make

In survey responses, participants described a wide range of projects that they carried out during the Open Make. Many used materials from the previous sessions and leveraged other available resources such as laser cutters or 3D printers. Many respondents named projects that no other participant had listed, such as a grappling hooks and "my very own drumstick holder." Other projects, such as a haunted house and a light-up Christmas tree, were listed by several participants within a single Clubhouse. These projects were probably either group projects or coordinated across the Clubhouse. Most facilitators reported that the Open Make sessions went well. Some used Open Make time to complete projects that were started during the other sessions. Other Clubhouses developed group projects for teams to work on together. At one Clubhouse, the prompt for Open Make was for youth to make something they had always wanted to make. Several Clubhouses offered Open Make sessions on multiple occasions to give youth more time to work with materials.

Many of the comments concerning challenges with specific Start Making! sessions related to the time it took for participants to complete projects. During Start Making!, lead facilitators noted that participants in some sessions wanted more time to complete projects, wanted a chance to try a project in a slightly different way, or simply did not have enough time to do the work they wanted to do. For Clubhouses carrying out the Start Making! program during limited afterschool hours, allowing enough time for iteration may require that each session be carried out over more than one afternoon. Lead facilitators sometimes adjusted to this need for more time by allowing participants to try sessions again after an initial attempt. These kinds of iteration cycles can provide youth with opportunities to reflect and plan and may have addressed some of the frustration reported by lead facilitators when projects did not come out as hoped the first time.

A light-up football/soccer field project in progress and complete from CLT Clubhouse in India. Source: CLT Clubhouse progress report.

This recurring theme of facilitators and participants wanting more time is consistent with the program goal of getting youth started with making. The program was conceived as a starting point with the hope that youth would

continue making beyond the initial Start Making! experience. Some Clubhouses responded to requests for more time by offering additional Open Make time or other opportunities for participants to explore specific session topics more deeply. The desire for more time suggests the importance of continuing to make materials available to Start Making! participants after the program is complete.

Other comments addressed how Clubhouses and participants adapted some of the sessions, for example, by making a human piano with the Makey Makey and Scratch (Session 2A) or using toothbrush heads (left over from Session 4A) to create bristle bots.

Exhibit 34. Youth soldering during an additional session of Start Making! Source: Screen capture of video collected at Casa de la Juventud Mora, Mora, Costa Rica. Source: Files shared in progress reports.

Additional Sessions

Of the 38 Clubhouses participating, 18 offered additional sessions to meet the interests of Start Making! participants or to take advantage of local resources and capacity. Often the additional sessions entailed adaptations of sessions included in the Start Making! Session Guide.

Examples of additional projects at Clubhouses follow:

- The South San Francisco Boys & Girls Club obtained a 3D printer and offered sessions for Start Making! participants to design and print three-dimensional objects.
- At the Palestinian Child's Home Club in Hebron, youth took part in an advanced version of the paper circuits activity by attaching additional devices such as sensors to their lights.
- At the Gum Springs Community Center in Alexandria, VA, youth created hydraulic devices using a variety of materials and syringes.
- At Fe y Alegría in Panama City, youth worked with mirrors and other objects to create photographs with optical illusions.
- At Casa de la Juventud Mora in Costa Rica, participants were introduced to soldering; many had never used a soldering iron before.
- At Neve Yosef Clubhouse in Israel youth made an erupting volcano model.
- At Parroquia de Fátima Clubhouse in Panama City, youth made craft projects out of recycled computer parts such as keyboard keys.

Some Clubhouses went on to create entire additional programs building off the Start Making! experience. Examples include:

- SWICN in Dublin offered two workshop series, one called Advanced Making and another called Junior Coders. Both built on activities in the Start Making! program.
- Fe y Alegría in Panama City, Panama offered a series of five additional making sessions, including making handcrafted lamps and incorporating LED lights into a number of craft projects.
- At the Neve Yosef Clubhouse in Israel, the youth volunteer who helped facilitate the sessions stayed on for additional programming during the months after Start Making! had ended.

Additional sessions often combined elements of other Start Making! sessions to create something different. At Puerta 18 in Buenos Aires, for example, youth created a matching game using a repurposed cardboard box, LED lights, batteries, and simple paper fasteners. Game players matched items in one column with items in another column by making contact with the paper fasteners and a paper clip wired to the game. If they made the correct match, an LED light illuminated. Building this game required extensive planning on the part of the Start Making! participants goals.

Exhibit 31. Youth demonstrating a board game made at Puerta 18 Clubhouse in Buenos Aires, Argentina. Source: Files shared in progress reports.

Participants choose from a range of materials at the Boys & Girls Club of Metro West, Framingham, MA.

Findings on Progress Toward Program Goals

Goal 1. Technical Skills and Youth Development Outcomes

Goal 1. Support the development of specific technical skills as well as youth development outcomes necessary to apply such skills.

Start Making! aims to support youth in development of technical skills such as those required for working with the physical materials of making, along with accompanying youth development. The first goal of the Start Making! program was to "support the development of specific technical skills as well as youth development outcomes necessary to apply such skills". The Clubhouse Network has grouped the technical skills and youth development outcomes together as five creative competencies for youth which we use to organize the evidence for technical skill building and youth development from the Start Making! program data.

Goal 1a. Identify as a creator or maker and act on it by creating projects in the Clubhouse and beyond

A successful Start Making! program helps to shift youths' sense of identity so that they begin to see themselves as makers and see the world as editable. The importance of this sense of empowerment and sense of agency is captured in the following quotation from a leader at Awa City Clubhouse, Whanganui, New Zealand:

> [A] majority of these members are ones who are often hard to get creating and engaging in projects. They prefer to consume when in Clubhouse. So this programme has been great for them to find new ways to create and see that they can create and actually participate in projects that other members do during normal Clubhouse hours.

The confidence to innovate and bring together approaches learned from different sessions suggests that youth were adopting identities as makers. For example, at the South San Francisco Boys & Girls Club, youth combined elements of two separate sessions to create 3D paper lanterns — a project of their own design. In surveys, 62% of respondents reported that they could carry out this kind of independent work, mixing together ideas from different projects in a new project on their own or with help, and 85% reported that working on one project gave them ideas for another project in some or all sessions of Start Making!

Paper lanterns created at the South San Francisco Boys & Girls Club. Photo shared in progress reporting.

Participants at the Palestinian Child's Home Club, demonstrated their sense of identity as makers when they extended a project from within the Start Making sequence to meet a new need. Participants created devices based on the artbots that were intended to serve functions other than scribbling such as cleaning.

One participant from Sorenson Unity Center in Salt Lake City, UT, described the process of accepting and pushing past frustration as related to commitment to making.

> There were time[s] when I was very upset, I thought I could finish in one day, but it took longer. I was inspired by my choice of characters and the color I put on my project, so I wanted to finish it.

One Start Making! leader at the Thunderbirds Branch Boys & Girls Club in Guadalupe, AZ, noted an example of a participant who blossomed creatively during the program and adopted the role of a maker.

> I definitely saw [participant name] manifest her skills as a "maker" throughout the Start Making! program. She has always been a creative young girl, but throughout the Start Making! experience, I saw her step up to the plate and offer up unique, creative ways of making and exploring her own identity as a maker. Her Makey Makey-based piano robot was definitely a project that I saw made her proud. I truly hope that she continues to be a part of the maker camp experience.

Start Making! participants told us that they were ready to continue with projects even when faced with unexpected challenges. In participant surveys, 93% of respondents agreed or agreed strongly with the statement "If something doesn't work the first time, I try to fix it or try something different."

Sometimes linking Start Making! activities with identity comes from personalizing projects and connecting project ideas with passions and interests. At the Youth Connections Clubhouse in East Lismore, NSW, Australia, a facilitator told a story of a participant making a project personal:

> During our open make sessions, one participant wanted to design a maze for his rat 'Beauty'. He has a very special bond with his rat, and took considerable focus, time and attention to the details of the build. With support from our mentors, he
>
> and taped the structural floor, walls and ceiling with corrugated cardboard. He considered hinges-in the ceiling panel to open the maze lid and an insert box for Beauty to nest in. He then wired up some RGB LED's to 3volt batteries and made a lit passage through the maze.

Participant working on building a maze for his pet rat Beauty at Youth Connections Clubhouse in East Lismore, NSW, Australia. Source: Facilitator progress report.

Goal 1B. Confidence in creative expression — shown through experimenting, iterating, remixing, persisting through failures, and transferring content across media types (e.g., transmedia storytelling)

Through creative endeavors and opportunities to adapt projects and make them their own, youth develop confidence in their capacities as creators. At the Sorenson Unity Center in Salt Lake City, UT, the early success of two partners completing a project independently enhanced their confidence and inspired their peers.

> Members at the Clubhouse have been inspired because of their projects. It was the first Start Making project that was completed (that was not part of a session) and has impressed many of our guests and visitors. [name] and [name] now want to do Start Making! projects EVERY DAY!

A participant in the South San Francisco Boys & Girls Club noted that proficiency with technical tools opened up his perceptions of his creative options and capabilities.

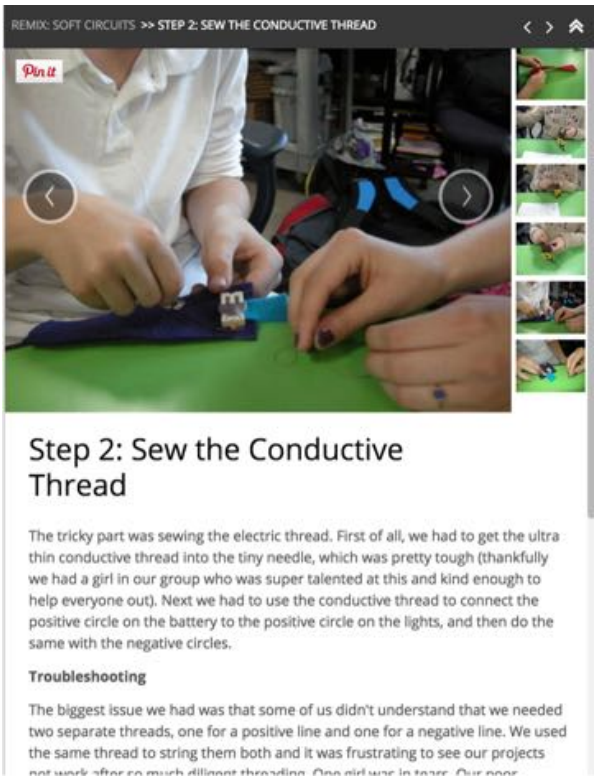
> I like 3D printing because I can create anything I want and I can make my dreams reality. 3D printing is now my favorite thing in Tech Builders.[4]

In surveys, we asked participants about their degree of confidence in expressing themselves by making art. Of those responding, 74% reported that they could do this by themselves or could do so and also teach others. We also asked participants if they did things to make the projects their own during the Start Making! sessions: 49% of respondents reported that they did so in some of the sessions, and another 36% indicated they had done something to make all or nearly all the projects their own. These kinds of creative adaptations ranged from small embellishments (e.g., turning paper circuits into lighted greeting cards) to a more general rethinking of the original project (e.g., folding paper circuits to create origami lightboxes).

Sometimes young people need to know that things can be edited and changed and that the way things have been designed isn't immutable. The Makey Makey provides youth with an opportunity to rethink common computer input devices. One participant from Sorensen Unity Center commented, "I learned that there is other ways to have a keyboard. [I would make] a new keyboard for a cool computer."

A key element of creative confidence is the understanding that several iterations are often needed for a project to be a success. We found evidence in progress reports and surveys that Start Making! participants were learning to iterate and learning to accept the reality that projects do not always turn out as expected on the first try. At Sorenson Unity Center in Salt Lake City, UT, facilitators documented Session 3 (soft circuits) in Build in Progress. Many participants made the common mistake of using one wire instead of two resulting in projects that did not light up as expected. Facilitators helped participants remain calm and fix their mistakes.

[4] Local name for the South San Francisco Boys & Girls Club adaptation of Start Making!



Screen capture from Built in Progress documentation of Soft Circuits at Sorenson Unity Center in Salt Lake City, UT.

The soft circuits project didn't always work out as expected the first time and participants often had to re-try steps. Of survey respondents, 84% reported that in some or all projects, they started with one plan and ended up making changes to their approach. Such responses are consistent with the survey responses reported above — that 85% of respondents agreed or agreed strongly with the idea that " If something doesn't work the first time, I try to fix it or try something different." The importance of being prepared for the unexpected is also consistent with the 91% of respondents who reported that their projects took more or less time to complete than expected.

Projects that do not go as planned can serve as important learning experiences for youth. One youth participant from Thunderbirds Boys & Girls Club in Guadalupe, AZ, experimented with paper craft and motors, bringing together materials from two sessions to find out whether he could create a flying machine. Although his creation did not fly, the attempt afforded the opportunity for thinking about different aspects of the engineering design problems related to flight.

Exhibit 36. A motorized paper craft airplane created at Thunderbirds Boys & Girls Club, Guadalupe, AZ. Source: http://buildinprogress.media.mit.edu/projects/2217/steps.

In one progress report, a Clubhouse leader reported that participants who had to iterate to get something to work were more satisfied with the results of their efforts.

> The members were having a hard time getting the wire to attach to the battery. Once they completed their scribble machine they were very happy and had a sense of relief, they also felt more [satisfied] because they were able to overcome a challenge.

At the Boys & Girls Club of Metro West, in Framingham, MA, two girls worked together to create a guitar using a Makey Makey and Scratch. According to their program facilitator,

facing challenges and the need for several iterations were a key part of the process.

> These girls have encountered many challenges and difficulties, but they have overcome many of them by taking their time researching and using creative methods.

According to survey data, many participants encountered situations in which they decided that the best approach was to adjust their initial plans. Of those responding, 85% reported starting projects with one approach in mind and adjusting their project along the way.

Across Clubhouses, much of the evidence for creative confidence appeared when participants planned ambitious projects or faced frustration and surprises along the way to their finished products. Much of this reflection was expressed in project descriptions posted on ClubhouseVillage.org, Build in Progress, or in public social media.

Goal 1C. Technical tool literacy, including using a variety of tools, materials. and many different resources, such as open-source programs, accessible electronics, hackable gadgets for personal fabrication, and DIY engineering tools, for design

Youth in Start Making! explore a wide range of technical tools—from computer programming to sewing. By integrating different technical proficiencies and STEM concepts in the projects, the Start Making! sessions can help youth develop broader technical capacities and creative confidence. In participant surveys, we asked how well youth thought they could carry out the following tasks related to the Start Making! program: express themselves making art, build 3D art, sketch or mock up an idea, build circuits, mix together ideas from different projects and present and demonstrate projects. Across all tasks, half or more responding youth rated themselves as either able to carry out the task independently or to do so and also teach others. Youth participating in surveys rated high levels of agreement with statements about whether they could solve problems and that if something did not work the first time, they would try to fix it or try something different. This sense of competence as makers was evident as well in the pride that youth showed in the final projects they demonstrated at Show and Share and other public events and online on ClubhouseVillage.org.

One project in an additional session at the Gum Springs Community Center in Alexandria, VA, was the construction of automatic pet-watering devices using a wooden frame, a bowl, and a used two-liter PET bottle. In carrying out the project, participants gained experience with basic woodworking tools, including power drills, and made original decorations for the devices.

Making automatic pet-watering device at Gum Springs Community Center, Alexandria, VA. Source: http://gscomputerclubhouse.blogspot.com/2014/12/diy-project.html.

One quotation from a progress report by a participant (age 9) cited the many stages leading to different kinds of technical tool literacy (in this case working with circuits and sewing) youth needed to complete a project:

> First, we drew a picture of a design and then we cut it out in felt. Then we glued the design onto a felt bracelet. After this, we sewed conductive thread from the LilyPad to an LED light on our design. Because we worked in pairs, one of us sewed the positive to positive and one of us sewed the negative to negative. We then put a battery in the LilyPad holder and it lit up! We liked this project because we like to sew and we like to make things light up. Next time we would like to try making our clothes light up!

A Clubhouse leader from Sorenson Unity Center in Salt Lake City, UT, described how working with soft circuits provided the opportunity for learning both sewing skills and working with conductive material.

> This project was done in four one-hour sessions. We spent a couple [of] sessions teaching the kids how to sew basic stitches with regular thread before tackling the soft circuit project. Then the kids spent a session drawing out their designs in detail and cutting out their felt wristbands and shapes. In the final session, the kids hot-glued the pieces onto their wristbands and used conductive thread to sew the positive and negative paths from the battery to the light.

Several Clubhouse leaders mentioned that participants struggled to learn to sew. For those participants not already familiar with the basics of sewing. Facilitators worked with participants not only on the specifics of sewing but also on more general skills that contribute to technical tool literacy but also on the more general skills that contribute to technical tool literacy, such as breaking down a challenging task into manageable pieces and reflecting on what is or is not working.

Participants working on a sewing project at WYTEC Clubhouse in Chicago. Source: Facilitator progress report.

Across projects and Clubhouse sites there were examples of participant work that suggested growing fluency with the tools offered in the program along with an interest in new tools and combinations of approaches.

Goal 1D. Awareness of STEaM (science, technology, engineering, arts, and math) subject core concepts such as conductivity, completing an electrical circuit, grounds, high voltage, connectors such as alligator clips, switches, user interface design, debugging, basic circuit layout, human factors, and ergonomics; musical and other performing arts, auditory aesthetics, visual aesthetics, and attending to audience reception and social context

Each Start Making! session's design embeds key STEM content learning opportunities along with opportunities for creative expression. In completing the activities, participants must navigate through the realities of complex

natural phenomena while experiencing the engineering design process and having opportunities to engage in creative endeavors. For example, light-painting activities can raise questions for participants about why our eyes perceive fast-moving objects differently from stationary ones.

Exhibit 32. Participants work on an additional project using NXT programmable LEGO bricks at the Jardim Conceição in Osasco Brazil.

The progress reports and participant surveys cited several situations in which successful completion of an activity brought about greater awareness of STEaM concepts. In one progress report, when commenting on the challenges of a particular activity, a facilitator noted that to be successful participants had to be attentive to STEaM concepts embedded in the activities.

> The challenges were understanding the negative and positives on the LED lights. It took the members a few tries to figure out how to connect the LED lights to the cooper wire and making . . . [them light].

One participant quotation in the progress report from Sorenson Unity Center in Salt Lake City, UT, highlighted a maker's introduction to the conductivity and polarity:

> I also really liked it because I love learning about how the copper can conduct electricity and get it from the battery to the light. I love learning about how the battery has positive and negatives sides.

Goal 1E. Collaboration and networking, working in pairs or teams to enhance personal projects, peer-mentoring on technical skills sharing or to create group projects

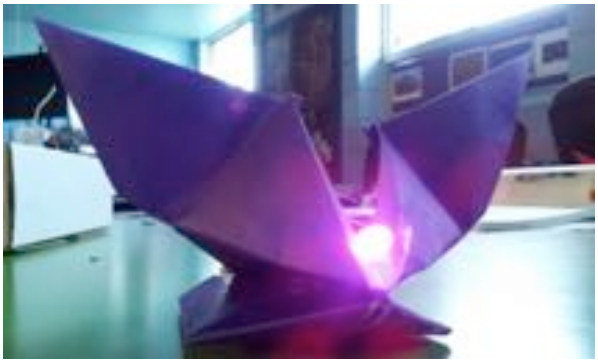
Start Making! activities are designed to provide opportunities for youth to collaborate formally through shared projects and, in a more ad hoc manner, to turn to neighbors for advice, help, or discussion while working. In some Clubhouses, sessions were sometimes carried out in large groups, but in most cases participants had some degree of choice about their level of collaboration with others. The program was designed to support youth working together and benefiting from the different perspectives that teams can provide while developing the communication skills necessary for successful collaboration.

One Clubhouse leader reported in a progress report that in one case, challenges in the project activities opened door for collaboration between participants:

> Most members were able to do the basic note card paper circuit with no problem. When we moved on to the origami lightbox, it became more difficult for some of the younger participants. Many members were

> able to help each other with the origami part.

Survey results suggest that Start Making! participants did work together and that they believed the collaboration served their projects well. We asked youth whether they had experienced the following: "I worked with another maker and it changed the way the project turned out." 74% of survey respondents reported that this happened in some, all, or nearly all of the Start Making! sessions. In rating their agreement with the statement "I do a better job when I work with others," 86% of respondents selected agree or strongly agree.



Origami light project bunny created and shared on the Clubhouse Village by a leader and a participant at the South San Francisco Boys & Girls Club. Source: http://www.clubhousevillage.org/projects/55840.

A Clubhouse leader from Casa de la Juventud Mora, Costa Rica, reported that a single participant's idea was once taken up by an entire group and adapted into a group project.

> In this particular session we dedicated [a] lot of time to design the final projects, and the girls shared excellent ideas and plans of action. There was a girl who proposed to create a sort of "electronic Christmas bonsai," and other members got so excited with that idea . . . [that] they worked very hard to get everything ready for the second Open Make session.

At Thunderbirds Branch Boys & Girls Club in Guadalupe, AZ, one facilitator noted the development of a participant's collaborative skills:

> [Name] was one of the students who definitely had a [hard] time "playing" with others. She started off only wanting to work just on her solo projects and at times had trouble sharing materials with others. Near the end of the workshop, [Name] definitely stepped [up] to the plate by helping her friend [Name] and pairing up with her to create and build a unique light-up Christmas tree. Both of the girls created something wonderful, and I am definitely proud of them for showcasing the spirit of collaboration and networking.

A facilitator at the WYTEC Clubhouse in Chicago described a complex project that three participants worked on collaboratively. The project involved construction of a cardboard robot that can move and is controllable in Scratch.

According to the facilitator of SWICN in Dublin, Ireland, the Start Making! experience encouraged teamwork and collaboration for participants.

> The young people worked really well as a team during this workshop. One of the greatest things to observe was the different roles each of them played according to their strengths and interests. Everyone worked collaboratively while respecting each other's ideas and had a great time doing it!

Goal 2. Youth Empowered to Share

Goal 2. Empower members to share what they learn with their communities/schools, as well as with peers in their Clubhouses.

Presenting work in Show and Share events can help youth gain experience talking about and presenting their work to others. In surveys, 56% of respondents indicated that they planned to share something at a demo or showcase event. Of those responding, 69% described themselves as either able to present their work by themselves or to do so as well as teaching others to do so. Many Clubhouses worked with participants to create presentation materials as part of Show and Share. Presentations often involved substantial planning, and facilitators reported that youth were interested in and committed to the events.

In reporting from Show and Share events, Clubhouse lead facilitators described youths' strong sense of pride in producing work they could share with others and particularly in capturing the interest and attention of audiences. In one evaluator visit to the South San Francisco Boys & Girls Club, participants' willingness to leave treasured project work behind at the Clubhouse indicated the value they placed on showcasing their work. All items for the Show and Share event were kept in boxes at the Clubhouse (instead of being taken home when completed). Several participants mentioned how much they looked forward to taking these items home but when reminded about the upcoming showcase event, all were willing to leave them at the Clubhouse.

Sacramento Food Bank and Family Services hosted an event at the end of the summer for family, staff, volunteers and others to see the Start Making! work. Each member had a booth and there was an award ceremony, food, raffle, and a photo booth. The facilitator reported over 60 people attended the event.

Labeled projects arranged for presentation at the Sacramento Food Bank and Family Services Clubhouse, Sacramento, CA.

A participant shows a project to a visitor at Thunderbirds Branch Boys & Girls Club in Guadalupe, AZ.

Sharing work had positive consequences for youth. Intel awarded three youths who were some involved in Start Making! as participants or youth mentors at the Willston Multicultural Center, Falls Church, VA, in 2014, Clubhouse to College (C2C) and/or STEM Scholarships. Two of the scholarship recipients participated in the DC Mini-Maker booth that the Willston Cultural Center co-hosted with Intel, and also participated in the 2014 Teen Summit. One youth mentor was the host for the Start Making! Show and Share event at the Clubhouse.

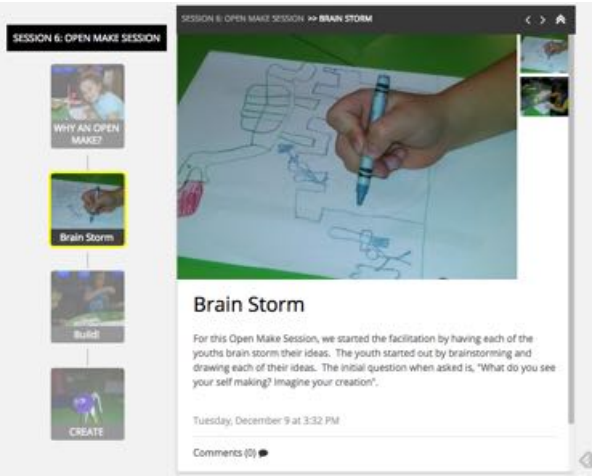
Many Clubhouses enthusiastically embraced the Show and Share session, inviting parents, community members, and others (e.g., board members) to see the work that participants had completed. For Show and Share celebrations youth often created poster boards or other signs to label and describe their work. During the Show and Share, youth typically had opportunities to talk about and explain their work to adults—an occasion that Clubhouse lead facilitators described as instilling a great sense of pride in the participants.

Goal 3. Spirit of Documentation

Goal 3. Foster a spirit of documentation, reflection, and sharing among both the youth participants and the adult facilitators.

Clubhouses participating in Start Making! were encouraged to document their ongoing work. Participation in the progress reports was extensive, with many Clubhouses using the open-text fields in the report form to provide thorough descriptions, and offering information labeled "optional."

In addition to the progress reports, Clubhouse lead facilitators and youth frequently shared details of their experiences and work by posting on the Clubhouse Village, the Build in Progress online platform, Facebook, and Google Plus. Some documented the sessions themselves, as well as work completed by the entire group. In some Clubhouses, lead facilitators helped individual participants or small groups document their work.



Screen capture of documentation of an Open Make session at Thunderbirds Boys & Girls Club, Guadalupe, AZ. Source: http://buildinprogress.media.mit.edu/projects/2199/steps.

At Thunderbirds Clubhouse, facilitators worked to document many stages of each project, creating comprehensive pages for the projects on the Build-in-Progress web site. The project descriptions served as artifacts to support reflection for their authors and were available as documentation for others interested in similar activity sessions.

Staff and participants at other Clubhouses showcased their work on the Build-in-Progress website. The CLT Clubhouse Start Making! group was a frequent contributor with a total of 23 posted projects.

At Sorenson Unity Center in Salt Lake City, UT, Clubhouse participants took part in documenting many of their Start Making! projects in progress using the Build in Progress platform. That documentation allows visitors to not only to see what participants built but also to read reflections on the making process and attempt similar projects on their own.

Progress report forms, developed to help inform evaluators and Clubhouse Network staff about the implementation of the Start Making! programs, included a substantial amount of optional information. We were interested in collecting large amounts of data but knew that data collection could be burdensome for some Clubhouses. Accordingly, we provided space for detailed information about participants (e.g., attendance records) and for sharing links to participant projects. Clubhouse facilitators' participation in the documentation process far exceeded our expectations. Of the 38 Clubhouses, 28 provided the optional participation data reporting on the attendance of 508 participants. Overall, Clubhouses submitted 23 optional success story descriptions of Start Making! experiences at their sites.

Goal 4. Organizational Capacity

Goal 4. Build capacity of youth development organizations such as Clubhouses to host and facilitate "make" programs that are inclusive of underserved populations.

The Clubhouses have always been places where learners can explore creative projects and work on design challenges. Making is thus a natural fit for the Clubhouse setting, with youth who are drawn to Clubhouses likely to find hands-on activities like those in Start Making! appealing and engaging. The resources available in the Clubhouse setting provide new makers, introduced through the Start Making! program, with options for the next steps for their development as makers.

A participant in the Boys & Girls Club Metro West in Framingham, MA gets help from Network staff member.

The ongoing staff development of The Clubhouse Network aligns well with the principles of educational making. Staff members throughout The Clubhouse Network are sensitive to the importance of participant

agency, to the value of giving broad choices to youth, and to the importance of documentation and reflection. Facilitator comments in the progress reports often underscored the attention facilitators give to providing enough support for participants without robbing them of the experiences of exploration and working through frustration.

Discussions with Clubhouse lead facilitators indicated that the key difference in terms of institutional and professional capacity between Start Making! and other Clubhouse activities concerned the nature of the activities and materials. Working with physical materials and interacting with natural phenomena (e.g., closed circuits, flying paper airplanes) created different kinds of learning opportunities for youth. In guiding these learning opportunities, Start Making! lead facilitators gained experience with different types of facilitation. It was important, for example, for facilitators to find the right time for introducing technical terminology (e.g., closed circuits) to give participants time to explore a phenomenon thoroughly before naming it.

Strong professional capacity was also evident in the large number of Clubhouses that offered additional sessions outside the Start Making! Session Guide, as well as by the number of facilitators who took on additional challenges such as presenting at Maker Faire as part of the Start Making! programs. Several facilitators developed new projects that challenged their own technical capacity. In doing so, they modeled enthusiasm for lifelong learning to youth.

Many of the challenges to educational making observed by Clubhouse lead facilitators concerned the logistics of getting started, such as finding out where to get materials and where to go for additional ideas. Once programs were complete, in several cases Clubhouses expanded on Start Making! by offering additional Start Making! programs for new cohorts of participants, by offering a substantial number of additional sessions, or by offering additional Open Make sessions.

A facilitator works with a participant at Youth Connections in East Lismore, Australia.

A facilitator works with a participant at Boys & Girls Club of Metro West, Framingham, MA.

Conclusions

The data collected on Start Making! in 2014 and 2015 demonstrate the range of approaches to implementing the program that are possible within Clubhouses and their communities.

Progress Toward Start Making! Goals

There is evidence that the Clubhouses participating in the Start Making! program are moving toward all four of the program goals.

Goal 1. Technical skills and youth development

Progress reports and youth surveys of capacity in each of the four creative competency areas suggest that participants in Start Making! are building technical skills and achieving desired youth development outcomes. For each of the five creative competencies that make up the technical and youth development outcomes[5], there was evidence from surveys and progress reporting that Start Making! was providing youth with growth opportunities.

Goal 2. Youth empowered to share

Start Making! has provided many participating youth with opportunities to gain experience by developing and sharing their projects with both their Clubhouse peers and the broader community. Clubhouses and participants embraced the call to share work in Start Making! with the wider Clubhouse communities and beyond.

Goal 3. Spirit of documentation

Both the Clubhouses as institutions and program participants themselves have taken up the task of documentation and reflection as part of the program. Much of the documentation is shared publicly for use by others and many examples emphasize the making process as well as the products made.

Goal 4. Organizational capacity

Given their strong tradition in digital making, Clubhouses were well equipped for carrying out hands-on making programming from the outset. Clubhouse facilitators developed as facilitators of making programming by carrying out the structured Start Making! activities and developing many of their own. Start Making! has provided Clubhouses with a structured introduction to the logistics and pedagogy of making needed to implement this hands-on program and engage with the larger community of maker educators. Many Clubhouse staff stepped up to engage as leaders with Start Making, for example by leading sessions on making at The Clubhouse Network Annual Conference or by mentoring newer Start Making! facilitators.

[5] The five creative competencies that make up our approach to goal 1 are: (1) Identify as a creator or maker, (2) Confidence in creative expression, (3) Technical tool literacy, (4) Awareness of STEaM, and (5) Collaboration and networking

Next Steps

As a study of making in diverse out-of-school learning environments, findings of this evaluation have implications for the design, implementation, and study of STEM-rich educational making.

Design and Implementation

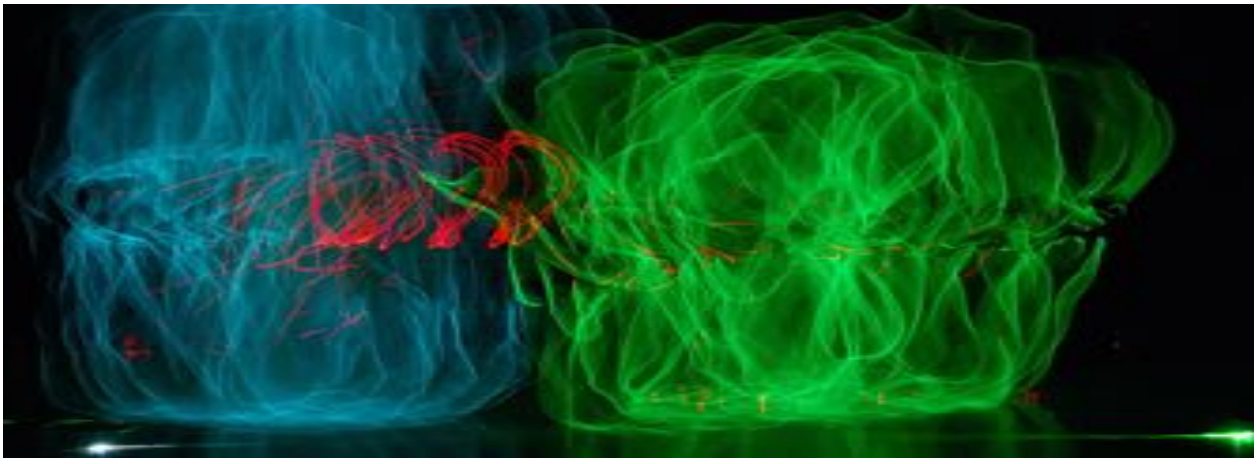
The Start Making! program design incorporates principles of collaboration, iteration, reflection, and flexibility. These aspects of the program align well with approaches throughout The Clubhouse Network. In the Clubhouse setting, participant expectations and prior staff experience and training may have paved the way for the implementations that were attentive to the details of program design.

We found significant variation across program implementations in terms of logistics of program implementation in terms of who was recruited to participate how the program was structured but some elements of the implementation — such as the emphasis on providing opportunities for reflection — were consistent across participating Clubhouses.

Further research is needed to better understand how programming like Start Making! can be implemented outside the Clubhouse Network, what organizations need to successfully adopt this approach, and whether additional supports and training are needed for successful implementation in other settings.

Research and evaluation

The open-ended, and process oriented nature of much STEM-rich educational making presents challenges for evaluators seeking to understand impacts of making on youth and organizations. This study leveraged the longstanding tradition of documentation and reflection in The Clubhouse Network providing templates for reporting on the Start Making! experiences that were taken up enthusiastically by Clubhouse staff and program participants who provided detailed reporting for use in evaluation and within the Clubhouses themselves for reflection. Questions remain about what modifications would be needed for evaluation tools to be valuable across a range of learning environments, including those without a strong tradition of documentation.



Youth paint with light at the Sorenson Unity Center in Salt Lake City, UT.

Appendices

Appendix A. Start Making! 2014 and 2015 Program Overview

Making Awards in The Clubhouse Network Since 2013

50 Clubhouses granted Making related support from 2013-2015

- 44 Clubhouses were awarded grants
- 3 "Start Making! for Girls" Clubhouse facilitators became 2014 Keep Making! fellows
- 3 Start Making! 2014 Clubhouses Coordinators were invited to serve as 2015 Peer Mentors
- 5 additional Clubhouses ran Start Making! for Girls pilot programs in 2013

Start Making! 2014

- 21 Clubhouses carried out the Start Making! program in 2014 in 9 countries
- 1 Start Making! 2014 Clubhouse ran the program and then ceased to participate in The Clubhouse Network (La Alameda Plaza)
- 1 Keep Making Fellow left the Clubhouse
- 4 youth and 3 facilitators were funded to attend NYC World Maker Faire in September 2014

Start Making! 2015

- 17 Start Making! programs were implemented Jan-August 2015. Two additional Clubhouses intend to implement before the end of 2015
- 2015 Start Making! Clubhouses are located in 8 countries
- 20 proposals were submitted in December 2014 for 2015 round, 9 proposals were from outside the United States
- 4 proposals were from Best Buy Teen Technology Centers, 3 were granted
- 6 Keep Making Fellows were engaged as leaders in The Clubhouse Network, producing blog posts and new activity tutorials on the Clubhouse Village and leading sessions at 2015 Annual Conference.

Appendix B. Summaries of Selected Participant Survey Item Responses

Exhibit B-1. Youth Survey Question 10. Which of the following have you tried? (Check all that apply).

Because respondents could choose multiple items, raw numbers are shown here.

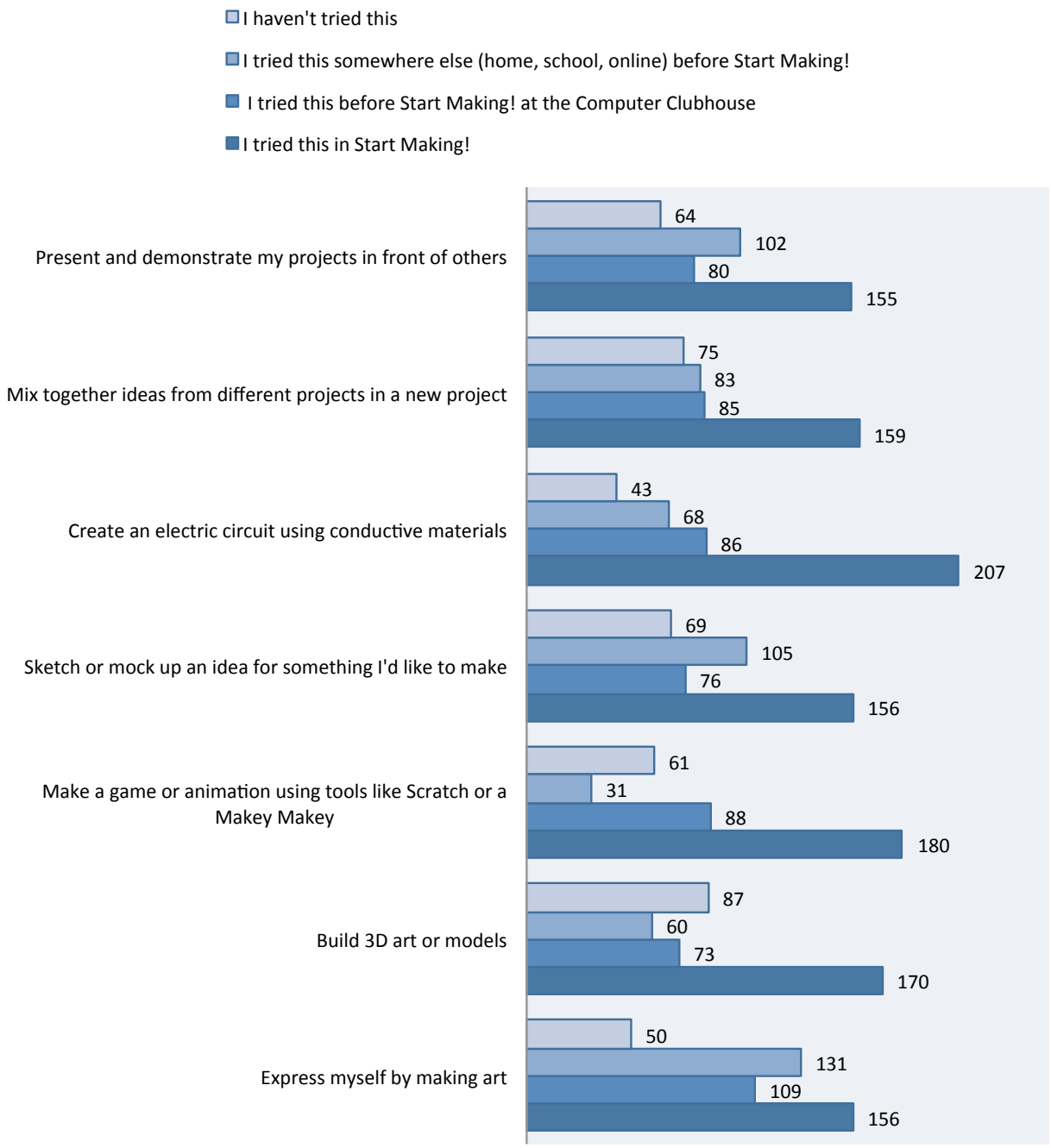


Exhibit B-2. Youth Survey Question 11: How well do you do each of these things? (select one option)

Shown as a percentage of responses to each item

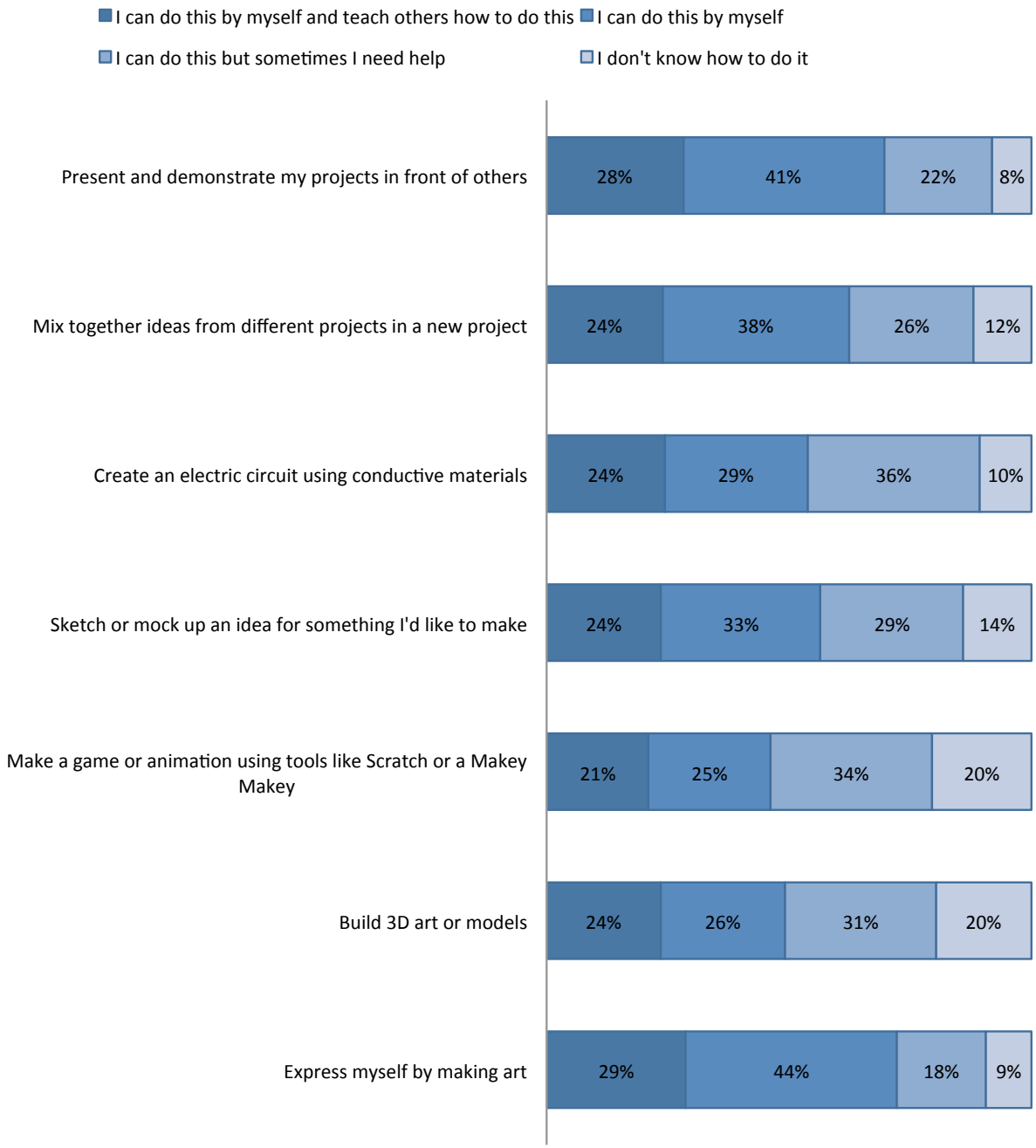


Exhibit B4. Youth Survey Question 12: Please rate your agreement with each of the statements below (select one option)

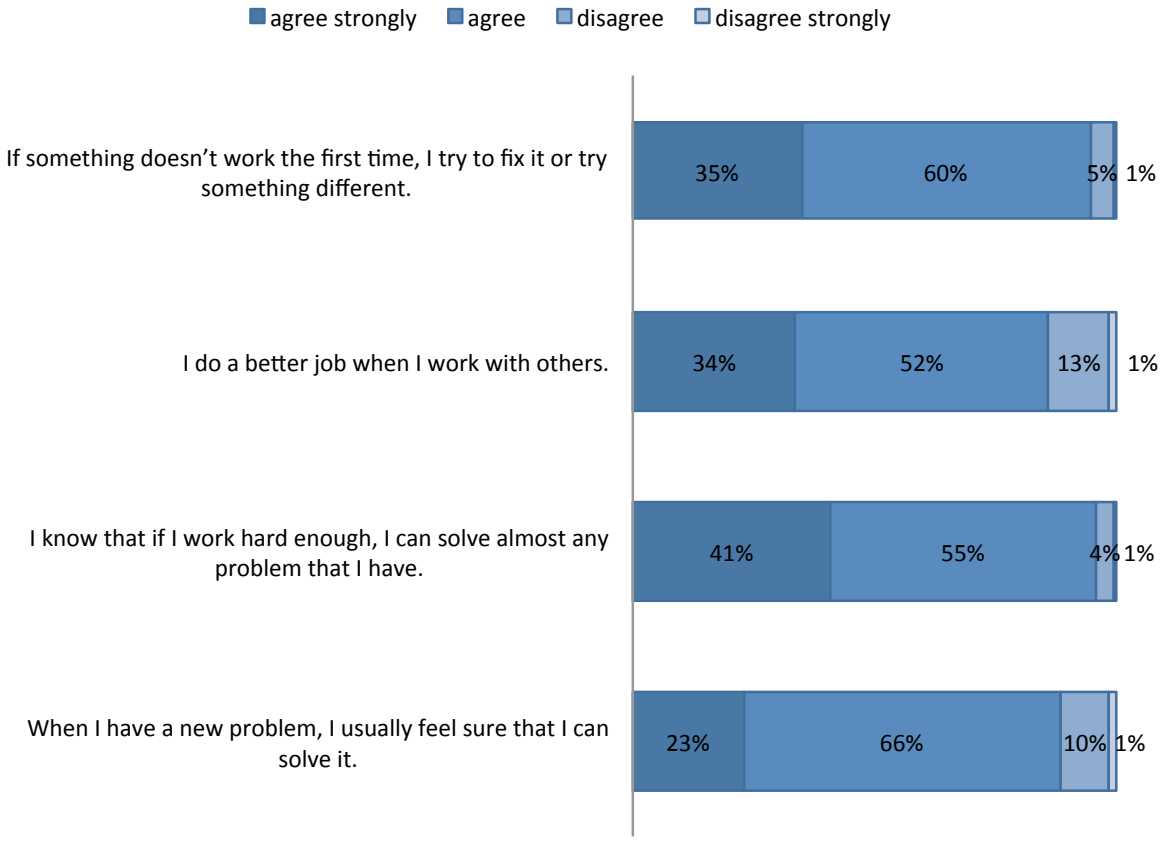
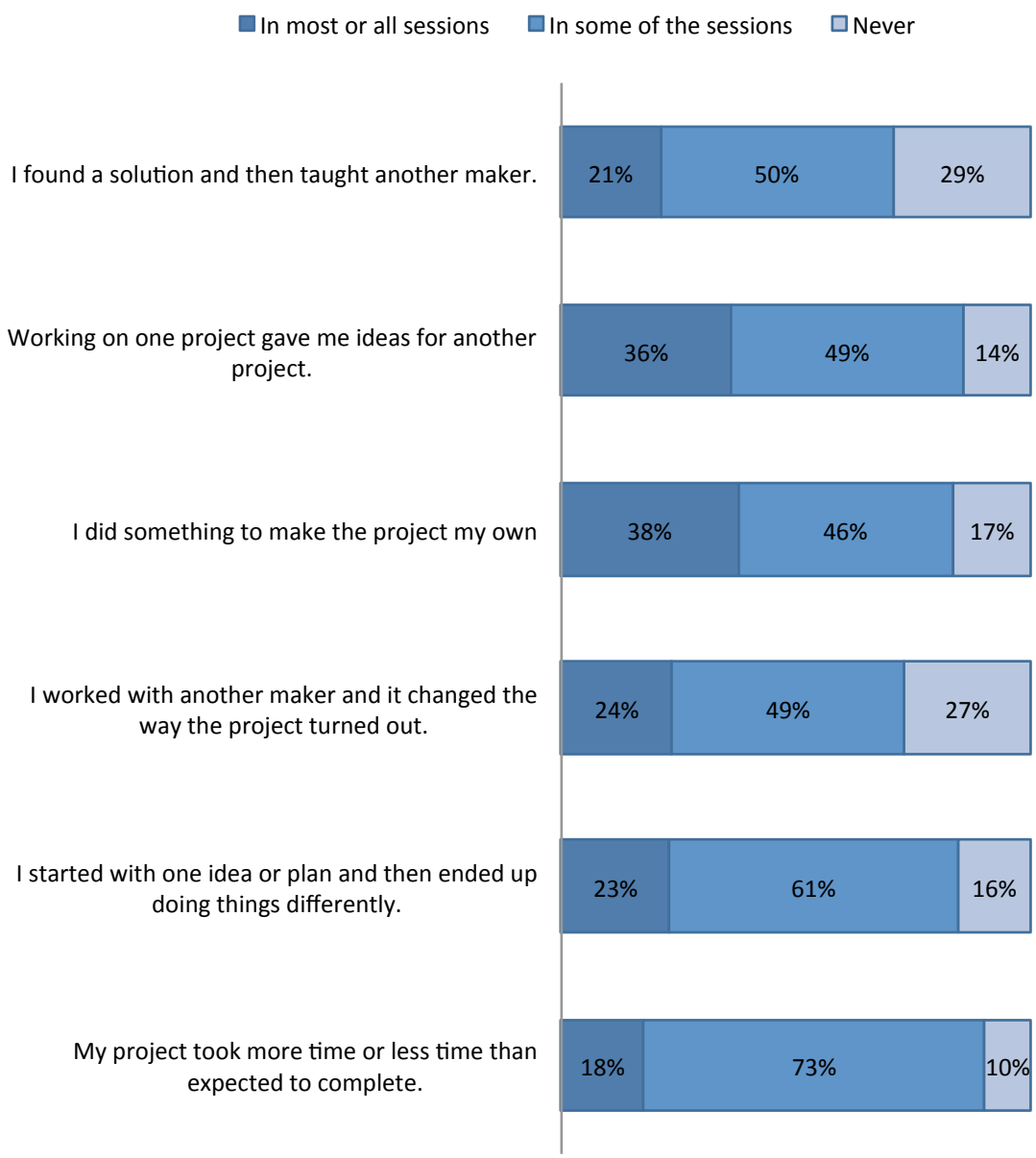


Exhibit B-3. Youth Survey Question 13: Which of the following happened while you were working on the Start Making! activities? (select one option)

Shown as a percentage of responses to each item



Appendix C. Start Making! Presentations Shared Online

Video and Photo Presentations

Many of the project examples cited in this report are available for viewing in the Clubhouse Village. In addition to project pages posted in the Village, some Clubhouse staff included links to shared artifacts of the Start Making! program in their progress reports. These resources are listed below with Web links.

Video presentation of the Show and Share event at Gum Springs Community Center, Alexandria, VA
https://www.youtube.com/watch?v=fJbSqsX18C8&feature=youtu.be

Video presentation of Start Making! program at the Casa de la Juventud Clubhouse, Mora, Costa Rica
https://www.youtube.com/watch?v=LKk5F0sbhs4

Video presentation of Start Making! showcase at Sorenson Unity Center, Salt Lake UT
https://www.youtube.com/watch?v=O2gbjORPUDI&index=31&list=PLBiYXOTAub_UerUmn7bikMkrPpP4vCFnm

with sessions documented on Build in Progress,
http://buildinprogress.media.mit.edu/collections/start-making-computer-clubhouses

Photo slideshow presentation of Start Making! program at Boys & Girls Clubs of East Valley, Thunderbird branch in Guadalupe, AZ
https://www.youtube.com/watch?v=SD71x6qWanU&index=23&list=PLBiYXOTAub_UerUmn7biMkrPpP4vCFnm
with sessions documented on Build in Progress,
http://buildinprogress.media.mit.edu/collections/start-making-computer-clubhouses

Photos and videos of Sci-Bono Clubhouse (Johannesburg, South Africa) Start Making! program and participation in South Africa Maker Faire cross-posted on Facebook & ClubhouseVillage.org http://www.clubhousevillage.org/projects/60019 or http://www.clubhousevillage.org/projects/56386

Appendix D. Progress Reporting Data Summaries

Summary of participation data based on optional participant tracking

There are several sources of data on participants. The optional participant tracking sheet provides the most complete information but was not provided by all Clubhouses. Of the 40 Clubhouses that participated in Start Making, 27 provided the optional tracking of participant rosters in the evaluation progress reporting system with data on a total of 507 participants. For these Clubhouses, we have information on the number of youth who participated in each session and data on gender for each.

Based on what we know from the 27 Clubhouses that provided participation data, we can provide the following information about the number of participants in each session. Note that some sessions were not offered by all Clubhouses.

Exhibit D-1. Summary of youth participation in each activity session based on optional participant tracking

Session	Participants	Percent of all Participants (of 507)
Session 1. Connect, Light It Up: Paper Circuits	361	71%
Session 2A. Play Make It Sing: Sketch It, Play It	278	55%
Session 2B. Play: Paint with Light: Light Up & Paint	231	46%
Session 3. Build: Give it Form: 2D <-> 3D Paper Craft	273	54%
Session 4A. Remix Change the Move: Scribble Machine	186	37%
Session 4B. Remix: Soft Circuits	204	40%
Session 5. Open Make	285	56%
Session 6. Show and Share	217	43%
Additional Sessions	196	39%

Exhibit D-2. Table of Clubhouse participants based on optional participant tracking data

Clubhouse Name	Country	Number of Participants	Percent Girls
Boys & Girls Club of Metro West	United States	24	54%
Boys & Girls Club of Hudson County, BBTTC	United States	22	36%
Casa de la Juventud Mora	Costa Rica	14	100%
CEDES	Costa Rica	11	36%
Christian Activity Center	United States	13	54%
CLT	India	15	33%
East Palo Alto Boys & Girls Club	United States	11	100%
EXPO CENTER	United States	23	65%
Family Services Association of San Antonio	United States	11	100%
Grand Street	United States	24	50%
Gum Springs Community Center	United States	16	50%
Jordan Boys & Girls Club	United States	14	57%
La Alameda Plaza	United States	15	67%
Listo America Santa Ana	United States	31	48%
Neve Yosef	Israel	20	45%
Odense	Denmark	22	45%
Parroquia de Fatima	Panama	18	50%
Puerta 18	Argentina	13	15%
Sacramento Food Bank & Family Services	United States	18	56%
Sci-Bono	South Africa	15	20%
Sorenson Unity Center	United States	11	45%
South Boston Boys & Girls Club	United States	7	43%
Southeast and Armed Services YMCA	United States	21	48%
South San Francisco Boys & Girls Club	United States	46	39%
SWICN	Ireland	25	64%
Thunderbirds Branch Boys & Girls Club	United States	14	64%
Youth Connections	Australia	25	32%
Total		**507**	**51%**

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