**STEM Clearinghouse Survey Results**

Intro: In October/November of 2015 a survey related to use of hands-on activities, online Clearinghouses and general practice in relation to conducting STEM activities was disseminated to librarians across the US. This survey was sent out through the STAR_Net CoP listserv, ALA Public Programs Office, and through ARSL. 81 librarians or library staff responded to this survey fully (15 incomplete surveys were dismissed). Below is a breakdown of all responses received.

Question Responses:

*Question 1: Please Tell us your role in your library (81 answered, 0 skipped)*
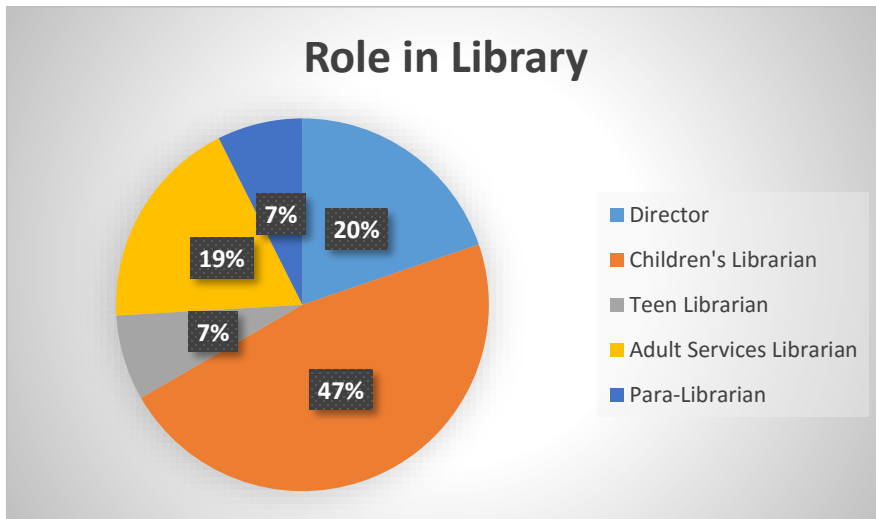
This question also had a free-form area so respondents could include positions not listed, or clarify if there was overlap. Answers indicated in the free-form area include: Youth Services Assistant, after-school STEM facilitator, Branch Manager (2), Technology Specialist/Digital Services Manager (3), Youth Services/all ages other than adult (6), NASA support staff, District Consultant (3), Program Director or Manager (6)

Question 2: Do you personally facilitate, or are you familiar with hands-on activities and programs in your library? (81 answered, 0 skipped)
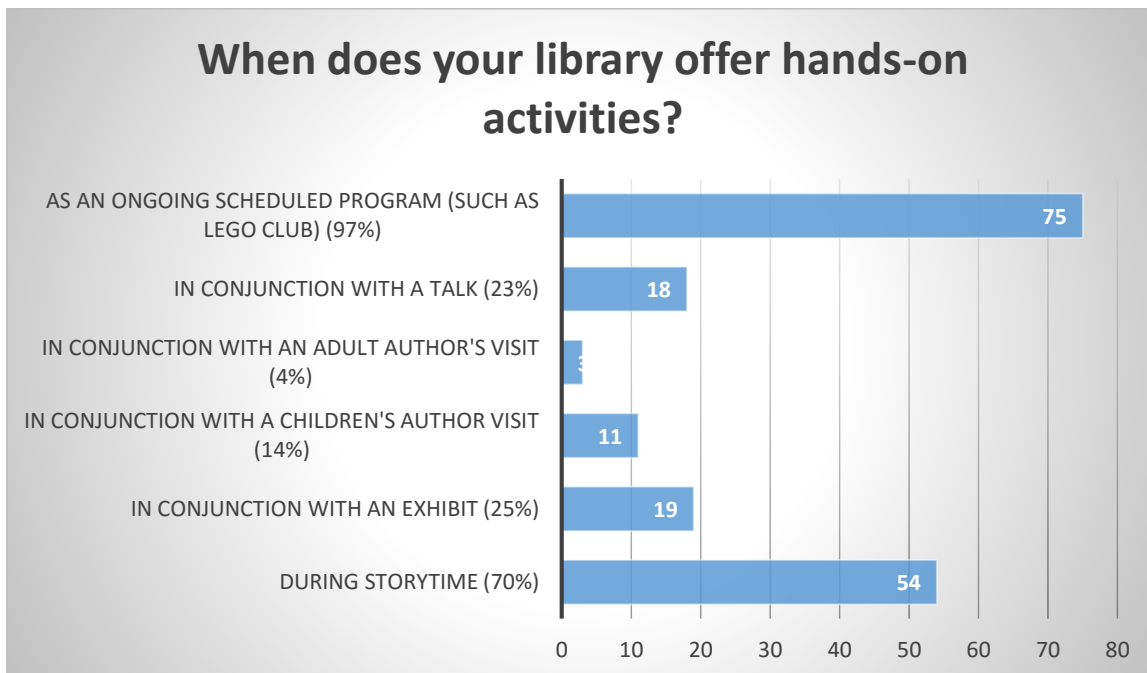
Question 3: Briefly describe some of your library's most popular hands-on activities and programs. (75 answered, 6 skipped)

Full answers to this question can be found in Appendix A. Answers were coded for the following key words/themes:

LEGO (1), Robotics (2), Engineering (3), Arts and Crafts (4), Storytime (5), Minecraft (6), Maker (7), Astronomy (8), 3D Printing (9), Recording/Video (10), Coding (11), General Science (12), Gaming (13), Cooking (14), Book Club/Summer Reading (15), Exercise (16), Music (17)

Many responses were coded multiple ways. For example, an activity can be coded for LEGO, Robotics and Coding if it is an advanced activity. The following word cloud shows the frequency of these activities.

It is important to note that we only asked the libraries what their **most popular** hands-on activities were. This is not an exhaustive list of programs completed at these libraries, but rather, the ones with the best attendance or that generate the most buzz. We also made it clear that these did not have to be STEM activities (arts and crafts ranks highly), but it should also be noted that almost all of the 'most popular' programs **were** STEM based. This implies that even if libraries aren't doing predominantly STEM activities, when they are doing them, they're bringing in more patrons. LEGO activities were rated the highest (twice as high as any other activity), followed by Arts and Crafts, General Science, Robotics, Engineering and Coding activities.

Question 4: Are any of your library's hands-on activities STEM based? (79 answered, 2 skipped)
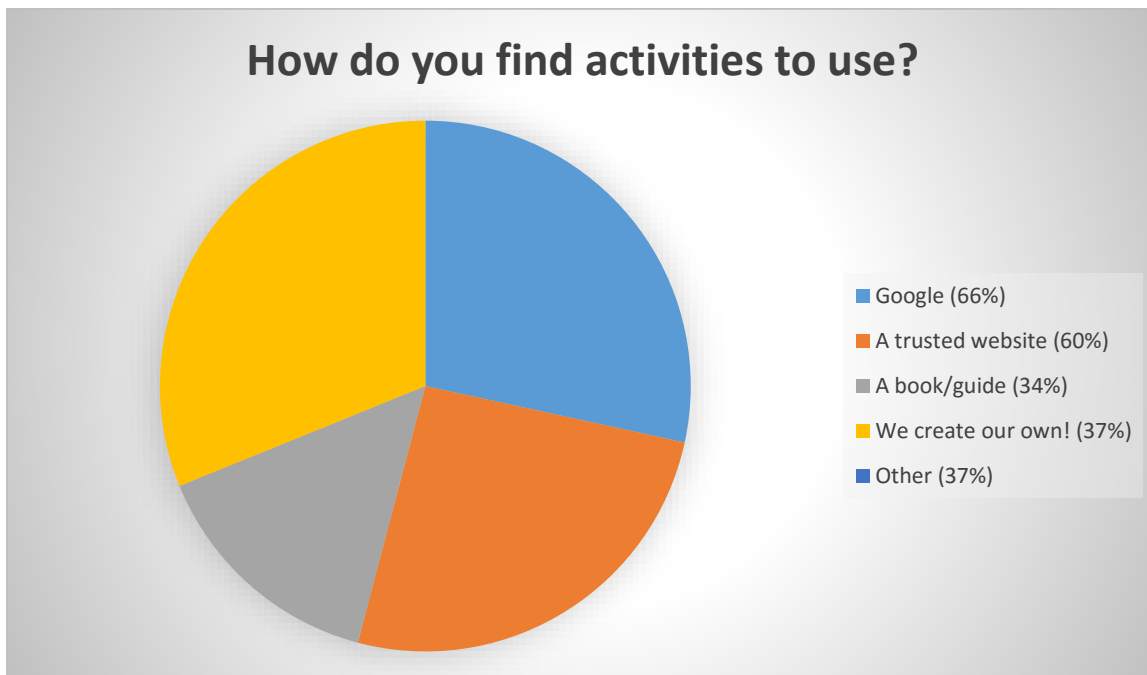
Are your activities STEM based?

6%

94%

- Yes
- No
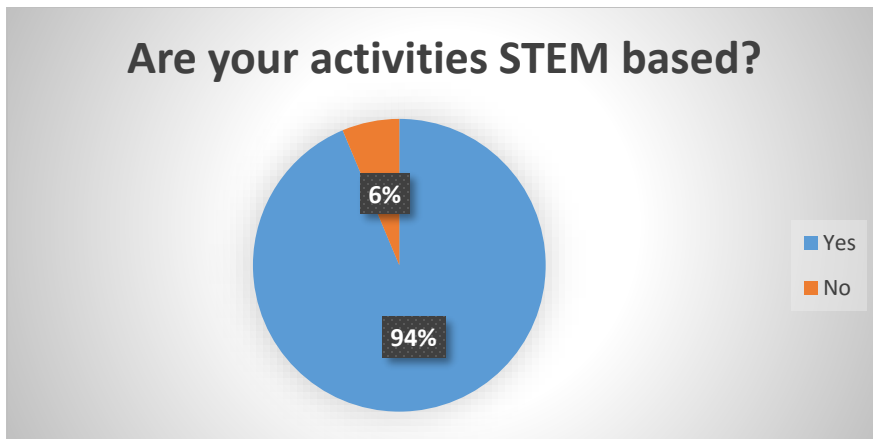
Respondents to this question overwhelming confirmed that their library does STEM based hands-on programming (so, programs that include a STEM focus and aren't just arts and crafts). Respondents were asked to provide examples of this programming. Full responses can be seen in Appendix B. These responses showed that most libraries did STEM programming as part of a club (LEGO programs in particular) or as another weekly or monthly program (STEM storytime, astronomy nights, etc). One off events were actually less likely for STEM-specific activities. If the library was "doing STEM", it was part of an ongoing program.

Question 5: When does your library offer hands-on activities (choose all that apply) (77 answered, 4 skipped)

When does your library offer hands-on activities?

| Category	Value
AS AN ONGOING SCHEDULED PROGRAM (SUCH AS LEGO CLUB) (97%)	75
IN CONJUNCTION WITH A TALK (23%)	18
IN CONJUNCTION WITH AN ADULT AUTHOR'S VISIT (4%)	3
IN CONJUNCTION WITH A CHILDREN'S AUTHOR VISIT (14%)	11
IN CONJUNCTION WITH AN EXHIBIT (25%)	19
DURING STORYTIME (70%)	54

As confirmed by Question 4, Most respondents (97%) said their STEM programming was ongoing. Very few libraries reported that their STEM programming was centered around children's or adult author's talks. Storytime (70%) was also a very popular time to conduct STEM programming. 29 respondents provided supplementary information in comments. Please see Appendix C for those responses. Many respondents said they also have "one-off" STEM programming as the need arises, that they have a maker space, and that they regularly incorporate STEM into summer reading. Another popular response (though it was phrased in a variety of ways), is that many libraries provide unfacilitated activities for patrons to explore at their leisure. This could be in a maker space, a table in a hallway, or at the checkout desk.

Question 6: How do you or other library staff find hands-on activities to use? (Choose all that apply) (79 answered, 2 skipped)

How do you find activities to use?

- Google (66%)
- A trusted website (60%)
- A book/guide (34%)
- We create our own! (37%)
- Other (37%)

While many respondents trust google to find activities, a good deal of them also had specific websites they chose to visit (Pinterest, Web Junction), or relied on binders of activities from previous trainings. 37% of respondents come up with their own activities (normally modifying them from existing resources). Respondents that choose "A trusted website", "A book/guide", or "Other" were asked to explain their answers in comments. The full list of those responses can be found in Appendix D. The most listed individual website was Pinterest, followed by the STAR_Net Site, Instructables and other individual institutional sites (such as a science museum). Many respondents also relied on kits, or training materials (binders, hand-outs) from specific trainings. A good number of respondents also said they rely on one specific staff member to find items, or on handouts from the State Library.

Question 7: If you had access to a searchable database of hands-on activities, what search criteria would you find most valuable? Rank importance from 1-8. (80 answered, 1 skipped)
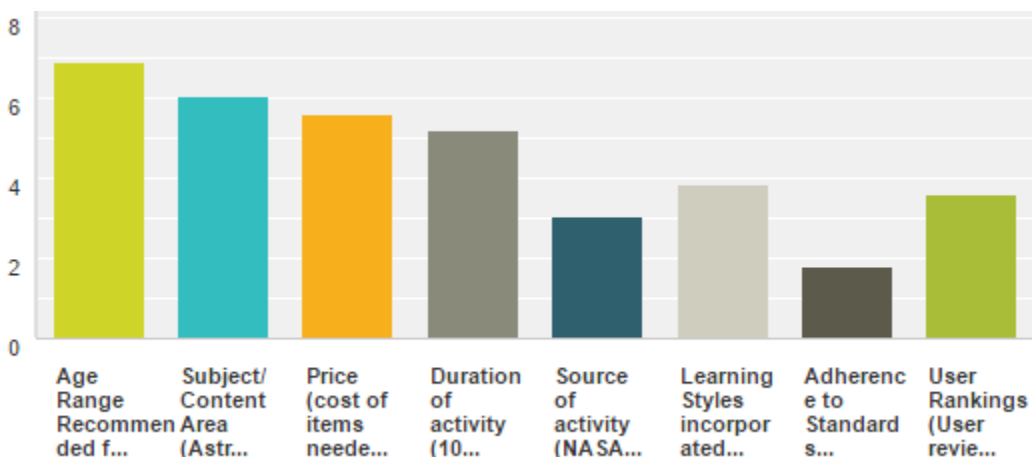
As you can see from the chart, we had a wide range of responses to this question. Overall though, age, subject matter and price seemed to be the most important across respondents. Most respondents did not seem to feel that adherence to education standards was an important metric when choosing activities, nor was the originating source of the activity.

Question 8: Are there any search criteria categories that we should have included in the previous question that would be useful to you? Why? (46 answered, 35 skipped)

Full responses to this question can be found in Appendix E. Popular responses included prep time, what items are needed to facilitate the activity, how hard the activity is for the facilitator, and ability to search by keyword (using a search bar to look for words like "robots" for example). Many respondents also said it's imperative to have a picture of the activity being conducted included, preferably at the top-most level, because that's how they judge their own comfort level.

Question 9: In addition to the activities and resources that will be housed on the Clearinghouse, we will also provide access to PD opportunities such as webinars and in-person trainings, educator guides, facilitation tips and other related information. Is there other background info that would be useful to you as you deliver hands-on activities and programming, specifically of STEM topics? (51 answered, 30 skipped)

Respondents to this question most often brought up the need for resources to teach/facilitate/introduce coding. The second most common response was the need for how-to videos or step by step pictorial instructions for activities. They also asked for 1-page fact sheets (for themselves, to hand to caregivers, and for kids participating in activities). The need for a part of the website to include local info (like separate forum pages) was very clear as well. Full responses to this prompt can be found in Appendix F.

Conclusions:

It is clear from this survey that libraries who do STEM based hands-on programming see a great deal of success with these programs, and tend to offer them ongoing activities due to their popularity. It is also clear that libraries tend to go with "safe" activities like LEGO Club, Maker activities and other programs that they feel do not require background knowledge, because they are not comfortable with those activities. There is a real demonstrated need for 1) vetted resources (Pinterest is the current most common place to find activities); 2) how-to videos or pictorial descriptions of activity facilitation; 3) A place to find local connections to aid in facilitation; 4) Background resources/handouts for varying audiences 5) Blogs/Forums or other means of communication between geographically dispersed libraries who have used these resources.

Suggestions from this survey will be used in the development of the STEM Resource Clearinghouse, as well as the companion starnetlibraries.org site.

Appendix A: Full Coded Responses to Question 3

Paper Airplanes, Roller Coasters, Egg Drop, Bubbles, Density, Art, Crafts, LEGO Club (3, 3, 3, 12, 4, 1)

LEGO free-build, construction zone, Tween Gaming, Elementary STEM afternoons, preschool science (1,3, 13, 12, 12)

This year, the middle schoolers I've seen after school have built balloon rockets, explored siphons, created CO_2 fire extinguishers, and more. (3, 3, 3)

Preschool and School-age STEAM programs (4, 12)

coding, snap circuits, lego robotics, minecraft (11, 3, 1, 2, 6)

Lego robotics (using WeDo kits and EV3 kits to build lego robots), App storytimes (digtal literacy through storytimes using apps), Super science workshops (focus on STEM concepts and experiments), Coding workshops. (1, 2, 11, 11, 12, 11)

LEGOs After school craft/activity club Fun day with games, crafts and LEGOs available for free play. (1, 4, 4, 1)

Maker Meet-Up, Makey Makey projects, craft programs for all ages, Robotics Club, Astrophotography, 3D printing, littleBits projects. (7, 7, 3, 2, 8, 9, 2, 11)

Lego Club, Science Club, storytimes, Crazy 8 Bedtime math Club (1, 12, 5, 12)

3D Printing Classes, Scratch Classes, Strawbee programs, Makee Makee programs, Video game design classes, to name a few (9, 11, 11, 11, 13)

Lego club, science program, adult coloring program, etc. (1, 12, 4)

STEM spots in story time classes, hands on STEM classes for elementary aged students-for example Survival Skills: Attack of the Fort 3-5th graders will make catapults. K-2 Explorers: All about Me-using STEM skills, investigate what makes each person unique. Teen Tech it & Take its-come and go program for teens to make technology related crafts. Computer coding classes for elementary & teens (5, 12, 3, 3, 12, 12, 4, 11)

Sewing classes, Recording studio programs/individual recording sessions, 3D printing. (4, 10, 9)

UAV workshop, Lego workshop, crafts and DIY events (12, 1, 4)

Lego clubs, robotics, craft programs, LED wearables, sewing, 3D-printing. (1, 2, 4, 4, 2, 4, 9)

LEGOs, STEM hands-on classes, Family Science Night (1, 12, 12)

Our library offers on a monthly basis Lego club for ages 6-8 and ages 9 and up, a Science Rocks! program for ages 9 to 15. We also offer drop-in crafts, art club programs and will be starting a maker space called Imagination Station. (1, 8, 4, 7, 7)

Hour of Code and tech exploration. We use Spheros, Finches, and Lego Robotics to teach youth library users coding. (2, 3, 2, 2, 1, 11)

We have a Lego Club that meets once a month. During the summer we also offer 2 Science Clubs. One is for ages 6-9 and the other for ages 10-13. Every other month we offer STEAM programs. (1, 12, 12, 12, 4)

Minecraft, Lego, any science program (6, 1, 12)

Simple Science, Lego club, Preschool Recycool Crafts, Open-Ended Art, Music in Motion, Reader Dogs and Craft portion of Preschool Storytime (12, 1, 3, 4, 4, 5)

Lego club, First Friday programs with theme based activities, a maker series in visual arts and crafts, authors' visits with activities, computer literacy classes including tech help. We also offer annual programs with activities including International Observe the Moon Night. (1, 12, 4, 11, 8)

LEGO club, simple cooking activities, marble run, motorized LEGOs (1, 14, 3, 1, 2)

Legos, using tech toys (Ozobots, Sphero, Osmo, Littlebits), marble mazes, creating art, egg drop science, building catapults, colour science, experiments with baking soda, etc (1, 2, 3, 4, 2, 3, 12)

Lego Club, Lego Mindstorms robotics, Maker Camp, Little Makers (1, 1, 2, 7, 7)

book club, "emerging issues" discussion group, monthly jazz or classical concerts, storytelling group, computer classes for adults (15, 15, 5, 11)

I host a Tinker Tuesday program once a month afterschool for grades K-6th, a Lego program one Saturday a month with suggested building themes, and assist in our weekly story times to include some STEM activities. (3, 1, 5)

Legos, Hour of Code, Vex robotics, Dot and Dash robots, Makerspace programs like sewing series and Pinbusting (Pinterest-busting, like Mythbusters!), any quick 5 steps or less activity like building a kite, making a paper airplane, etc. (1, 11, 2, 2, 7, 3, 3)

Minecraft Hour of Code MakeyMakey Arduino 3D Printing Scratch (6, 11, 7, 9, 11)

Lego Club, Drop-in Crafts Galore, Egg Drop, Gingerbread House Making (and other food activities), Zumba, Jump Bunch (1, 4, 3, 16, 4)

Summer Reading Club (SRC) STORY TIME STEM-PACKS SRC Pilot 2014-15 (see #10 for references to information) Music Together (playing instruments together) Yoga Chess Tournaments DoggyPals (reading with live dogs) (15, 5, 16, 17)

we have a monthly lego club, a weekly STEAM program that involves mostly hands on science experiments, and craft time following weekly storytime. (1, 12, 4, 5)

Lego Club, STEM activities, Build a Rocket, Create with Toothpicks, marshmellows,and gunmdrops (1, 12, 3, 3, 14)

Lego Clubs; Coloring for Enjoyment for all ages; craft weeks with our Summer Reading programs; Space Kiosk: a computer interactive with exoplanets information (1, 4, 4, 15, 12, 8)

Art Afternoons, FLL, FTC, Anime Club, Fan Club (4, 1, 2, 4, 4)

Lego Nights, Holiday Crafts, Snap Circuits. We have coloring pages and jigsaw puzzles available at the reference desk and they are Very popular. (1, 4, 2, 4)

3D printing, Builders Club, Fun with Science (with an astrophysics professor), Science Club (hands-on experiments for K-3), Science Club Jr. (hands-on experiments for PreK) (9, 3, 12, 8, 12, 12)

Most are very popular. For adults most hands-on computer classes are popular, including basic Word, etc. more advanced coding classes and Raspberry Pi/Ardunio/3D printing. For children pretty much everything is popular. (11, 9, 12)

Maker Programming (7)

legos, crafts, art projects, cooking classes, etc (1, 4, 4, 14)

3D printing workshops for teens, Lego/Minecraft programs for children (9, 1, 6)

Lego clubs - legos provided for kids to play with. Moss robotics -- librarian works with kids, instructs them on the robotics kits, they experiment We have regular crafts programs for children & for adults. (1, 4)

Robotics Club, Lego Mania, Children's Story Hour, Kids week/month in July, almost every kids program or event (1, 4, 5)

Lego Club, arts and craft activities (1, 4)

Lego Club Robotic Club Chess Club Puppet Story Hour (1, 2, 6)

Lego club, knitting group, various children's STEM programs that our youth services librarian develops (1, 4, 12, 6)

3D printing (9)

Lego club, craft programs, 3D Printing workshops, Tech Time (makey makey and littleBits sessions) (1, 4, 9, 2, 2)

adult coloring group, cook book book club, arts and crafts (4, 14, 4)

Lego club, storytime, Scratch programming, STEAM labs, pajama math programs (1, 5, 11, 4, 12, 5)

Legos, arts, robotics (1, 4, 2)

Super STEAM for Gr. 1-5, Lego building, preschool story times with play opportunities, toddler art, (12, 1, 6, 4)

Lego Club, crafts, theme days like Star Wars Day (1, 4)

Lego Club (we call it Block Party); Science Lab (Kindergarten & 1st Grade) & Lab Ratz (Grades 2 & 3) - hands on science experiments for kids (1, 12, 12)

We-do Robotics - MakersCamp - Imagination Stations (1, 2, 11, 7)

Stem Programs Lego Clubs Baby Storytime (12, 1, 5)

Origami, LEGO club, storytime (ages 2-5), pokemon/yugioh club, minecraft, toddler obstacle course, Make and take storytime (4, 1, 5, 6, 16, 5)

STEM club, Lego Club, Crafternoons (12, 1, 4)

Adult coloring, Teen Crafts (4,4)

3D printing, edible science, lego club, hands-on science experiments, gaming, building with food (9, 14, 1, 12, 13, 14)

Robotics, Hour of Coding, block(s) party, (2, 11, 1)

Lego club, crafts, absolutely anything that is hands-on (1, 4, 12)

Sphero Club, STEM Time activities tied to national celebrations like, Chemistry week, Geography week and Geology week. (2, 11, 12)

Youth: Lego/Clics/K'nex building. litlleBits and Cubelets electronics. Makey Makey and Squishy Circuits electronics. Wizard (Harry Potter) games. Spy School (code breaking, etc.). Build It (large scale with cardboard boxes, foam packing, etc). Minecraft -- live action games based on Minecraft, Minecraft crafts and on-server challenges. General crafts.Table-top games. Video games. Read to the Dogs. Adults: Computer use (Internet searching, photo editing, word processing, mobile devices) Fiber craft instruction. Majong. Letterboxing -- stamp making and hunting. Genealogy. Conversation Circles (practice speaking English, Spanish, or French). (1,2,3, 7, 2, 3, 6, 6 13)

Storytimes, Weekly craft type activities, Minecraft monthly program (5,4, 6)

Appendix B: Supplemental Answers to Question 4

Science Sunday will be hands on activities, Sandwich bag science, Soda Bottle Science, Coffee Can Science and Shoebox Science Kits, like gravity, magnets

Building catapults, learn to code, LEGO building

We have Star parties with telescopes, Legos, Circut building etc

So many great ones--fire science, color, smell, flight, etc.

events presented by futuremakers

Super Science workshops, coding workshops, 3D printing classes, Apps based on STEM concepts

Leaves & legends program - after school

We have a "Making STEAM" heading for STEM/STEAM-based programs including those I listed above as well as projects using Scratch.

In addition to above, coding programs, arduino and related programs, 3D modeling software classes.

Lego, robotics, some crafts, 3D printing (engineering), LED Wearables, arduinos, Raspberry Pi (science)

STEM Exploration Stations, Family Astronomy Night, STEM Spots in story time

The Lego and Science Rocks!

STEM is taught through coding literacy; Sphero coding with the apps we use requires numerical values for robot travelling speeds and turning angles; Finches require numerical values input with their commands in order to direct the robot's movement and turning ratios; Lego Robotics builders focus on Engineering as the program guides them through building their robots and programming them to move.
We have done Geography and Veterans for our STEAM programs. We have more planned for 2016.

Minecraft, Lego

Simple Science, Legos, Recycool Crafts

Computer literacy classes and tech help desk and International Observe the Moon Night activities.

NASA's "Museum in a Box" activity series, and NASA's "Aeronautics for Pre-K" book and activity series

We try to blend STEM skills, open exploration, problem solving, and teamwork into our programs

computer classes(?), rare field trips to accompany programs about public lands

Science of Winter program (looking at snowflakes, then using snow and baking powder and vinegar), Legos, Hour of Code, Vex robotics, Dot and Dash robots, Makerspace programs like sewing series and Pinbusting (Pinterest-busting, like Mythbusters!), any quick 5 steps or less activity like building a kite, making a paper airplane, etc.

Egg Drop, Lego club

STORY TIME STEM-PACKS SRC Pilot 2014-15

Friday afternoon STEAM program mostly science hands on science experiments

Build a Rocket, Create with Toothpicks, marshmellows,and gunmdrops
Space Kiosk

FLL and FTC

We do a quarterly "Hour of Code" program for tweens and in the summer, we dedicate one day a week to STEM activities whether it is snap circuits, science project fun or legos construction.

Too hard to list all of them, but I would say a near majority of our programs are STEM based.

DNA extraction, design challenges, e-textiles, cooking

makey-makey, snap together electronics, robotics

"Explore-a-story" hands-on storytime with stations re concepts like measuring, gravity, sound, light, and color.

Moss Robotics, Legos, Marble Walls, creating Rube Goldberg type contraptions

Robotics Club uses technology with laptops and software

not currently

Make It Tuesday, Totally Tech Day, storytime crafts, Lego Club

Most of the above

children's activities

See items listed in 3 above

BB 8; 3D Printer; Dash & Dot: Melissa & Doug; Lincoln Logs; Legos; Tinker Toys; blocks, etc.

Monthly Super STEAM program for Gr. 1-5, weekly during the summer, at the Library Center. We have 10 branches and many of the others also provide STEM opportunities throughout the year. In addition we provide STEM activities when appropriate during story times and put out periodic passive STEM exploration stations out for visitors to use throughout the year.

creating our own Operation game

see above answer

nxt robotics

We-do Robotics - MakersCamp - Imagination Stations, Summer Science Camp,

We are a partner with the Museum of Science and Industry and do their Science Minor program

STEM Saturdays- a rotating series of programs in the summer

Build a small motor, brushBots, curcuits

Crafts sometimes do electronic based stuff like, light up holiday cards

3D printing, edible science, lego club, hands-on science experiments,

Robotics, Hour of Coding, Plane Science,

Legos, Minecraft (branch library), STEM day (variety of stem related activities at a branch library)

Lego/Clics/K'nex building. litlleBits and Cubelets electronics. Makey Makey and Squishy Circuits electronics. Spy School (code breaking, etc.). Build It (large scale with cardboard boxes, foam packing, etc). Scratch coding. Wearable tech.

mentos exploding soda bottles, LEGO brick building, Science of color, etc

See above and also Game Creation, Shadow Science, Hydro-power, Big math logic puzzles Big Hero 6 Engineering design, Scatch-ing with WeDo, littleBits, Hour of Code, Arduino Basics, Mobile app workshop, Tinkercad, App Time Storytime, Science Storytime and more

Nano Tech, Chemistry experiments, robotics

at least 50%

ramps. legos, blocks

We've built simple robots, given 3D printing workshops, done simple chemistry experiments, and take an engineering approach to some Lego activities.

Weird Science Club, 3D Printing, Lego building

Appendix C: Comments to Question 5

Every session we have a multitude of activities based on STEM

We also just recently ran a Maker Showcase with demos and interactive displays

very popular in the summer!

Regularly scheduled programs on alternating topics.

in conjunction with public school events

As stand-alone programs: "3D-printing for Families," "Arduino 101"

We also have open and available manipulates, literacy builders, tan-grams and a floor poetry box available in the room at all times for easy exploration

Also during passive-or stealth- programming. Activities are set up in the library for youth users to interact with. Google Maker Camp during the summer is another way we participate in bringing STEM activities to the library for use at any time.

We offer a tech help desk for patrons needing help with any software or electronic device. Our computer classes for adults are held once a week and teach a new skill on a bi-monthly basis

other hands-on activities are scheduled as needed

STORY TIME STEM-PACKS SRC 2014-15

WE pick a week or more for each activity in Summer and lay the materials out for people to come in at thier convenience.

We invite orgs to do STEM related programs that are hands-on as well.

In our drop-in spaces, such as our STEAM space and computer labs

we have regular hands-on craft programs and a once monthly maker session

as a stand alone program

as standalone programs

They are open for patrons to try at all times.

one time special events

As sporadic one time programming

Special events such as STEM day, Games day

Teen Tech Week

Special planned programs (one time type programs, not weekly or monthly)

Stand along programming

As drop-in activities in our "Discovery Lab"

as a stand alone, one time activity

Regularly schedule craft classes.

Summer Reading Program

One offs, in conjunction with events and fundraisers,immersive camps during summer and school breaks

Appendix D: Full comment responses to Question 6

Science Experiment books in our children's section of the library. Shoebox Learning Centers: Science, Soda Bottle Science, Sandwich Bag Science, Coffee Can Science

Librarian blogs, and LibraryMaker website

How to smile, pinterest

Star-net has been super helpful, but also I have gotten great ideas from Lawrence Hall of Science, Bay Area Discovery Museum, other librarians.

MD Tech Connect, Webinars, Conferences, Scratch, hour of code

Make: simple robots, Tinkering, Edutopia, App Crawlr, Storytime Underground

STEM workshops/NASA website

We are fortunate to collaborate with a computer scientist who is a local resident and has introduced us to a wide array of STEAM-based hands-on activities. We also were chosen for a NASA pilot project that partnered us with Harvard-Smithsonian Center for Astrophysics, which operates the MicroObservatory Online Telescope. This program Astro4Girls & their Families was a wonderful hands-on STEAM based project!

makezine.com

Pinterest

instructables.com

Pinterest

Instructables, websites of other libraries with makerspaces

Pintrest and Facebook library group sites, MBLC listservs, word of mouth, discussion groups, word-of-mouth

Our Tech Services Librarian has a youth services background and is very STEM-focused.

Most of the time I look at what is happening during the month and see if there is a scientist that should be highlighted and work from there.

Books in the collection/educational websites

Our programs committee determines what outcomes we want and assigns tasks for researching appropriate activities. This could engage any of the above list.

Teen Librarian Toolbox, Pinterest, Children's Library Association, SLJ

We take a look at various websites, blogs e.g. The Show Me LIbrarian, Abby the LIbrarian, Amy Koester's blog, School Library Journal's STEM pinterest page and many others

Makercamp.com, instructables.com, makeit@thelibrary

talking with others; list serve

Exploratorium website, PBS Out of School Activities website, Iowa Governor's Scale-Up Programs, Local commmunity college instructors

Make Magazine (and books), Instructables, Make it @ Your Library

STORY TIME STEM-PACKS with expert educators

Pinterest.com

Pinterest

workshops; libray listserv; e-mails

Pinterest, professional Listservs, Storytime Undergrounds, from colleagues

web sites: Babble Dabble Do, TinkerLab

Lynda.com

makered.org

from some of our purchased items like Ozobot, makey-makey, raspberry pi

Tinker Lab, No Time for Flascards, Artful Parent

Ideas from Exploratorium,

Our Children's Librarian

Pintrest

Resources are too numerous to list here

conferences and webinars, MakeIt@the Library, Instructables

Pinterest

Pinterest

State Library; Make;

email listservs, Pinterest

Pinterest!

MAKE

Museum of Science and Industry Science Minor Club

MANY storytime websites

Ideas from workshops, other libraries

pinterest, yalsa

Pinterest

Ideas from StarNet

State Library sponsored workshops

Make magazine. litteBIts.com, Maker camp website.

Star Net, Steve Spangler, Library list-serv with examples of what other libraries have done

Collaboration with other organizations & individuals

summer reading activity guides, pinterest

Pinterest; Underground Storytime; librarian blogs; various craft books

All over - 4H extension office, pinterest, trainings

Lego, PBS, little bits, Make, Shared successes from colleagues, NGCP, Girls in Tech, etc.

YOUmedia Community of Practice Site

flyers from state (MA) , MacMillan Early science

We often get ideas from other libraries and librarians or community members.

Pinterest

Appendix E: Answers to Question 8

I think that you covered all of the search criteria that I have used.

Topic (winter, building, bears)--what kind of program could we work this into? Materials (for example, if we have a ton of craft sticks, what's an activity we could pull together so we can use what we already own?)

Materials: ie working with LEDs, snap circuits, etc

Age range, subject, and price

No

I can't think of any

I think that list is very comprehensive

Peripheral. For example, searching for Little Bits projects, which is less a content area and more a specific piece of equipment.

Standards for curriculum

Source of materials--to learn about options of where items are available; photos- to get an idea of how it would look, also would be helpful if these photos could be used by libraries to help advertise their upcoming programs (sometimes it is difficult to advertise a program that the general public is unfamiliar with); general promotional tools (wording for ads, images available for use, suggestions for groups to advertise to or target)

STEM silo, level of difficulty

not that I can think of

Resource suggestions for STEM career professionals who could share their experience in the field and/or participate in facilitating a STEM activity.

This is something new for us so we are still learning.

No

Being able to use all of the above search categories would be wonderful.

Additional resources that are available with the activity.

Links to educators - so public libraries and educators in school systems can collaborate!

Collaboration with scholastic educators. We are trying to develop that with STORYTIME STEM-PACKS: we are collaborating with two IUs.

Whether or not images are included. They're worth 1,000 words and they allow me to quickly judge how well tested an idea is and whether I could adapt it to use materials I have.

Yes- could also sort by activity materials. For instance, I need a craft using COTTON BALLS. Look up activities using cotton products, rather than going through each and every activity. Or include this in the back index for quick reference.

Use of outside resources (ie., local presenter)

Planning and set-up time needed

Difficulty of activity, prerequisite knowledge or skills

skill level needed for facilitator/librarian to lead activity

Nothing I can think of offhand.

If there's a scientist that can come in to talk about it, where are they located?

Age Level

mess level (you need a sink, etc) many library program rooms are limited for access to school science type ammenities

How much time it takes to get it ready

detailed instructions, photos ect. Suggested places to buy supplies

Bilingual

Level of difficulty: Helps further distinguish age groups and time needed, how many activities can be included in one event (if we wanted to create stations or if you need more adults to help)

I'd love to be able to search by supply - for instance, we were given a bag of old pill bottles, or old CDs

Availability of items (some things are hard to come by) or items needed (can it be thrown together with supplies most folks would have on hand?)

Outside expertise necessary to execute?

Maybe "Difficulty for Facilitator"? Some of our staff have less training than others, and knowing how much a staff person will need to know can help.

Brief summary or outcome.

Appendix F: Full answers to Question 9

Looks good!

Examples of student work or videos of exemplary lessons with real students.

Perhaps a bibliography of possible great books with projects that could be utilized.

Planned out guides that are easy to replicate with prices and how to do the activity.

An interactive blog or community space for sharing stories and ideas.

It can be more challenging to find resources for engineering and math topics than to find resources for science and technology.

That sounds sufficient.

Points of contact for program information

If you had a blog with guest-posts from libraries speaking about a specific program, how it went and any tips and photos

videos of experiments, demonstratons, how to conduct programs, etc.

I always make sure I have trusted information. Therefore a bibliographic reference area would be helpful.

I've noticed that STEM is used in a "hush hush" way around children. Adults are aware of the concepts and for some of us, our mission is to engage children and teens in the activities. When I've mentioned the acronym STEM to groups of middle schoolers and teens, I get blank stares. How can we educate and engage while empowering them with the knowledge about its importance?

Coding, computer applications

That sounds like pretty much everything I would need!

If possible, a list of community resources and available expertise.

background information to share with adults who participate in programs

A comments section to share what worked or what didn't work. Any tips are appreciated to make a program run smoother.

I would love some quick-tips and maybe a few talking points for parents/caregivers, and for children wanting to know a little more, so we can direct them to more library materials.

tips for promoting these activities would be helpful

Contact information to such as the IU3 Math & Science Collaborative, IU7 MakerSpace facility; bridges to School Districts

Your list is quite comprehensive.

links to careers associated with the activities?

I am eager to hear more about the Clearinghouse. Can't think of any specific information to ask.

Possibly knowing who else in the area would like to collaborate.

It would be interesting to read about what other libraries are doing for STEM progamming and to be able to contact them for advice.

Funding sources for maker and STEM programming. skilled volunteers willing to lead activities

I would like to be able to connect with people who have used the program before to understand the pros and cons of the presentation and any special requirements of it.

Ideal number of participants, will it work with a wide age range, what can/should be adapted about the project

Any information on block coding

Links to related video content that can be used to provide access to experts.

How to be prepared with answers for questions from the kids?

Anything necessary to offer these programs, for instance, I do not have a background in STEM fields, what do I need to know to make this fun for kids in a library setting?

HOW TO classes - How to get started - How to deliver programming to several age groups at once.

Answers to questions that are likely to come up from target audience

Those webinars sounds great!

Distance Learning

Sounds like you have it covered. Thanks.

lesson plans

none that I can think of

It's nice to have a fact sheet. Kids ask some pretty tough questions, we like to give them the right answer or give them a good resource. Also nice to have activity extenders to send home with kids.

All good anove!

I'm sure, none coming to mind at the moment though

None that I can think of presently.

No (5)