

Art &
Crafts

Circuitry

Robotics

Content
Creation

Game
Design

Coding

Digital
Fabrication

Maker
Tools

NPL MAKER MISSION PLAYBOOK

Welcome to the NPL Maker Mission!

Grades K - 12

Nevada Public Library (Nevada, MO)

Most projects are planned for youth in grades 5 - 12, but some are available for K-4th grade too.

Most challenges can be completed at home with either a **STEAM2Go kit** borrowed from the library or through our link to the fantastic STEM classroom by **Mouse Create**.

Step 1: Register as a NPL MAKER!

Contact the library and tell us that you want to join the **Maker Mission**. We will add "Maker" privileges to your account.

Only registered "Makers" can check out the awesome NPL STEAM2Go kits and log into the brand new Mouse Create classroom.

Step 2: Choose & complete a Challenge!

Choose a category by clicking a tab on the right side of this digital notebook.

Then click an activity to see the **Challenge Guide** for that Maker skill.

The Challenge guide will tell you if you need a specific STEAM2Go kit so that you can plan to stop by the library to check it out before you get started on the challenge.

Step 3 : "Wrap-It-Up" to WIN!

Complete the "Wrap-It-Up Form" online after you finish each challenge to earn an entry into the monthly **Mystery Maker Mission Prize Drawing**.

This is how we know who is participating in the Maker Mission program and how many projects you have completed, but it is also your ticket into the prize drawing -- so YAY!

Step 4: POST your Project Pics!

Some challenges are more difficult than others, but it's okay because no one is grading your work & we only see your projects if you choose to share pictures or videos with us.

Bonus tickets: if you *do* share a photo of you holding a project, we will enter a bonus ticket into the drawing with your name on it! -- so, DOUBLE YAY!!

Note: Challenges with a (*) next to them do not require a kit & can be completed right away if you have the supplies/wi-fi available at home.

Questions? Contact the library for more information!

Click on an **ART & CRAFTS** activity to see the Challenge Guide:

Paper
Crafts

Upcycling

Sewing
Stitches

Sewing
Machine

Yarn
Crafts
Crochet

Yarn
Crafts
Knitting

Duct
Tape
Accessories

Wood
Burning
(coming soon)
Pyrography



NPL Maker Challenge Guide

Arts & Crafts: **Paper Crafts**

NPL STEAM2Go kit available, but not required for challenge.

Complete any **3** of the following projects:

- ☐ Create a personal note card.
- ☐ Create an origami project.
- ☐ Make a project using recycled paper, cardboard, paper towel tubes, etc.
- ☐ Make a quilling paper project.
- ☐ Make an art piece with magazine clippings using collage.
- ☐ Make a card with rubber stamping techniques.
- ☐ Make a book page art (doodles, bookmarks, fold art, etc.)

Finished the Challenge?

- ☐ Fill out the [“Wrap-It-Up” Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the Paper Crafts Kit to the library.

Congratulations!

You have completed this NPL Maker Challenge.



Nevada Public Library

Resources about Paper Crafts:

Most projects in this challenge will require items found around the home or, if you need supplies, you may call the library to ask for one or more “take & make” kits to be put together for the project you want to create.

Books at NPL

Call Number	Author/Title/Summary
745 J73	Johnston, Malinda Book of paper quilling / Sterling/Lark 1994
745.59 HIC	Hickey, Julie Quick & clever instant cards : [over 100 fast to make handmade designs and ideas] / David & Charles, 2004
J 736 PET	Petty, David. Origami 1-2-3 / Sterling, 2002
J 745.54 LOO	Look what you can make with paper bags / Boyds Mills Press, 1999 This book offers instructions for toys, games, and other projects - all from paper bags.
J 745.54 TUR	Turnbull, Stephanie Paper Crafts / Smart Apple Media 2016
YA 736.982 K68	Kneissler, Irmgard Super simple origami / Sterling Pub. Co. 1999
YA 736.982 NGU	Nguyen, Duy Über Origami: Every Origami Project Ever! / Sterling Innovation 2010
YA 736.982 T968	Tuyen, P. D Wild origami : amazing animals you can make / Sterling Pub. 1996

STEAM2Go Kits available to check out for Paper Craft projects:

Cardmaking & Rubber Stamping	(NPL STEAM2GO kit)
Origami	(NPL STEAM2GO kit)
Quilling	(NPL STEAM2GO kit)

Links for online tutorials (non-kit projects)

Collage art with magazines:

Binder cover <https://www.instructables.com/Collage-Binder/>

Book page art:

Rolled Roses <https://www.instructables.com/Book-Page-Roses/>

Folded pages Heart <https://www.instructables.com/Protruding-Folded-Book-Heart/>

NPL Maker Challenge Guide

Art & Crafts: **Upcycling**

Complete any **3** of the following:

- ☐ Create a storage item using plastic or aluminum cans.
- ☐ Use any type of plastic bottle to make a bird feeder.
- ☐ Decorate a glass jar.
- ☐ Create something with paper towel rolls.
- ☐ Make a planter out of recycled materials.

NOTE: Most projects in this challenge will require items found around the home.

Finished the Challenge?

- ☐ Fill out the ["Wrap-It-Up" Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Congratulations!

You have completed this NPL Maker Challenge.



Nevada Public Library

Resources about Upcycling & DIY projects:

Books at NPL

Call Number	Author/Title/Summary
686.3 STE	Stein, Jeannine Re-bound : Creating Handmade Books From Recycled and Repurposed Materials / Quarry Books 2009 Instructions on how to take everyday materials from around the house, flea market, thrift stores, and hardware stores, to make hand-bound books
687 SUR	Surian, Adrienne DIY T-Shirt Crafts / Adams Media 2015
J 745.5 GAR	Garcia, Karina Karina Garcia's Must-Try DIYs / Sizzle Press, 2017 Unleash your creativity with these 20 easy do-it-yourself projects from YouTube sensation Karina Garcia.
J 745.5 THR	Threadgould, Tiffany Remake It! : More than 100 recycling projects for the stuff you usually scrap / Sterling Pub. Co, 2011 Written in a teen-friendly style, and printed on eco-friendly FSC paper, "ReMake It!" presents 95 cool eco-smart projects--like turning an oatmeal container into a cool tote.
J 790 UNB	Glenn, Joshua & Elizabeth Foy Larsen Unbored : The Essential Field Guide to Serious Fun / Bloomsbury USA, 2012

STEAM2Go Kits available for Upcycling projects:

Most projects in this challenge will require items found around the home.

Links for ideas to get inspired

<https://fabulesslyfrugal.com/diy/diy-projects-for-teens-and-tweens/>

<https://diyjoy.com/crafts-ideas/upcycled-repurposed/>

NPL Maker Challenge Guide

Art & Crafts: **Sewing Stitches**

NPL STEAM2Go kit available, but not required for challenge.

Demonstrate knowledge of these sewing basics.

Examples are shown in kit booklet or here:

<https://www.thesprucecrafts.com/learn-stitches-and-hand-sewing-projects-2978472>

- ☐ Thread a hand sewing needle.
- ☐ Knot the end of the thread with one hand.
- ☐ Hand sew a running stitch.
- ☐ Hand sew a backstitch.
- ☐ Hand sew a basting stitch.
- ☐ Hand sew a blanket stitch.
- ☐ Hand sew a blind stitch.
- ☐ Sew on a button.

- ☐ Sew a Tech Case

Log into Mouse Create and follow instruction “Sew a Tech case”

*Create a free student account/log-in on create.mouse.org Ask for the Group Code by contacting the library.

The instructions from Mouse Create Tech Case pattern are printed & found in the kit.

Finished the Challenge?

- ☐ Fill out the **“Wrap-It-Up” Form** online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the Sewing Kit to the library.

Congratulations!

You have completed this NPL Maker Challenge.



Resources about Sewing:

Books at NPL

Call Number	Author/Title/Summary
646.2 GAR	Gardiner, Wendy Sewing Basics / Star Standard Industries 2003
646.2 SHO	Shore, Debbie Half Yard Gifts : Easy Sewing Projects Using Left-over Pieces of Fabric / Search Press, 2016
J 646.2 SAD	Sadler, Judy Ann, Simply sewing / Kids Can Press, 2004 Provides instructions on getting started, materials needed, and basic sewing techniques and stitches.
J 646.2 TUR	Turnbull, Stephanie Sewing / Smart Apple Media 201
YA 640 BRI	Bried, Erin. How to sew a button : and other nifty things your grandmother knew / Ballantine Books, 2009

STEAM2Go Kits available:

Sewing & Embroidery kit (NPL STEAM2GO kit)

Fabric scraps are easy to find. Look for old pieces of clothing, old blankets and pillow cases work great too!

You may call the library to ask if a "Take & Make" kit for Hand Sewing is available. Supplies are limited.

Links for Hand Sewing & Basic Stitches

Basic Stitches:

<https://www.thesprucecrafts.com/learn-stitches-and-hand-sewing-projects-2978472>

Ideas for projects: <https://www.thesprucecrafts.com/sewing-4162917>

Instructables for Sewing: <https://www.instructables.com/sewing-2-3-4-5-6/>

NPL Maker Challenge Guide

Art & Crafts: **Sewing Machine**

NPL STEAM2Go kit available, but not required for challenge.

This challenge requires the use of a sewing machine.

You may reserve a time to use the sewing machine in the NPL Makerspace if you need access to one.

Demonstrate knowledge of these basics.

- Identify the parts of the sewing machine.
- Thread a bobbin.
- Thread the sewing machine.
- Make the following stitches using the sewing machine:

Instructions in

<https://www.thesprucecrafts.com/sewing-machine-stitches-4023693>

- Straight stitch
- Zigzag Stitch
- Backstitch

- Learn how to use & cut a simple pattern
- Create one of the following:

T-shirt pillowcase

<https://www.instructables.com/How-to-Make-a-T-shirt-Pillowcase/>

Fabric bookmark

PDF is clickable [here](#) and is also printed in kit

Finished the Challenge?

- Fill out the [“Wrap-It-Up” Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the Sewing Kit to the library.

Congratulations!

You have completed this NPL Maker Challenge.

Resources

Books at NPL about Sewing:

Call Number	Author/Title/Summary
646.2 GAR	Gardiner, Wendy Sewing Basics / Star Standard Industries 2003
646.2 SHO	Shore, Debbie Half Yard Gifts : Easy Sewing Projects Using Left-over Pieces of Fabric / Search Press, 2016
J 646.2 SAD	Sadler, Judy Ann, Simply sewing / Kids Can Press, 2004 Provides instructions on getting started, materials needed, and basic sewing techniques and stitches.
J 646.2 TUR	Turnbull, Stephanie Sewing / Smart Apple Media 201
YA 640 BRI	Bried, Erin. How to sew a button : and other nifty things your grandmother knew / Ballantine Books, 2009

Kits available:

Basic Sewing Tools Kit	(NPL STEAM2Go Kit)
Sewing machine	(MAKER REF / In Library use only)
Iron	(MAKER REF/ In library use only)
Fabric cutting mats & large rulers	(MAKER REF / In library use only)

Note: You may need to find your own fabric for the projects. Look for old clothing, sheets, pillowcases.

You may call the library to request a “take & make kit” for Machine sewing, but supplies are limited.

Links for using a Sewing Machine & Basic Stitches

Sewing straight lines

<https://www.thesprucecrafts.com/sewing-straight-lines-tips-and-tricks-2977525>

Troubleshooting

<https://www.thesprucecrafts.com/sewing-machine-troubleshooting-2978277>

NPL Maker Challenge Guide

Art & Crafts: **Yarn projects / Crochet**

NPL STEAM2Go kit available, but not required for challenge.

Complete the three steps below:

- ☐ Check out a NPL STEAM2Go Kit if you need tools.
Request a “take & make” kit at the library for yarn if you need it.
- ☐ Watch the tutorial video and read the beginners steps in the book “I can’t believe I’m Crocheting” that is included in the STEAM2Go kit.

Crocheting a granny square for beginners:

<https://youtu.be/nplsh-o9AM0>

- ☐ Create at least *one* of the following projects.. pattern/instructions for any of these beginner projects can be found easily in one of our Maker books or online when you search “Basic/Beginner pattern for crocheting yarn”

___ a small granny square (crochet)

or

___ a dishcloth (knitting or crochet)

or

___ a mug cozy w/ button (crochet or knitted)

Finished the Challenge?

- ☐ Fill out the [“Wrap-It-Up” Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the Crochet Kit to the library.

Congratulations!

You have completed this NPL Maker Challenge.

Resources

Books at NPL about Yarn crafts:

Call Number	Author/Title/Summary
J 746.43 BLA	Blanchette, Peg, Kids' easy knitting projects / Williamson Pub., 2001
J 746.43 BRA	Bradberry, Sarah. Kids knit! : simple steps to nifty projects / Sterling, 2004 Presents basic knitting techniques and instructions for making a backpack, a pillow, a doll, and other simple projects.
J 746.43 CLE	Clewer, Carolyn. Kids can knit : fun and easy projects for your small knitter / Barron's, 2003
J 746.43 INT	Kids knit : six projects, for kids by kids / Interweave Press, 1998 Illustrated explanations of the fundamentals of knitting accompany step-by-step instructions for six knitting projects that were designed by children.
677 KAN	Kandis, Mags Gifted : Lovely Little Things to Knit + Crochet / Interweave Press, 2010
J 746.43 Dav	Davis, Jane. Crochet : fantastic jewelry, hats, purses, pillows & more / Lark Books/Sterling Pub., 2005 This book provides step-by-step instructions for crocheting 30 projects, including game pieces, balls, bags, jewelry, cool stuff for your room, and things to wear.

STEAM2Go Kits available to check out about for Yarn Projects:

Knitting kit	(NPL STEAM2Go kit)
Crochet kit	(NPL STEAM2Go kit)
Loom Knitting kit	(NPL STEAM2Go kit)

Take & Make Supplies Kit: Yarn skein & buttons.

Call the library to ask if a “take & make” kit for Yarn projects is available. Supplies are limited.

Links for Yarn crafts

Knitting projects:

<https://www.thesprucecrafts.com/easy-knitting-patterns-for-new-knitters-2116495>

Crochet projects: <https://www.thesprucecrafts.com/crochet-4162930>

Loom knitting basics: <https://www.goodknitkisses.com/how-to-loom-knit-for-beginners/>

NPL Maker Challenge Guide

Art & Crafts: **Yarn projects / Knitting**

NPL STEAM2Go kit available, but not required for challenge.

Complete the three steps below:

- ☐ Check out a NPL STEAM2Go Kit if you need tools.
We have two kit choices for knitting;
Needle Knitting or **Loom Knitting**.
Request a “take & make” kit at the library for yarn if you need it.
- ☐ Tutorials to teach knitting skills
 - ☐ **Needle Knitting** Knitting a cup cozy for beginners:
<https://www.youtube.com/watch?v=w-SjR-sHOkA>
 - ☐ and read the beginners steps in the “My First Knitting” book that is included in the STEAM2Go kit.

OR

- ☐ **Loom Knitting** Loom knitting for beginners
https://youtu.be/vl_2aY0-xCY
 - ☐ and read the beginners steps in the “Loom Knitting” booklet that is included in the STEAM2Go kit.
-
- | | |
|---|--|
| <input type="checkbox"/> Needle Knitting project choice:
____ a dishcloth
or
____ a mug cozy w/ button | <input type="checkbox"/> Loom Knitting project choice:
____ a winter hat (any size) |
|---|--|

Finished the Challenge?

- ☐ Fill out the [“Wrap-It-Up” Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.
Return the Knitting Kit to the library.

Congratulations!

You have completed this NPL Maker Challenge.

Resources

Books at NPL about Yarn crafts:

Call Number	Author/Title/Summary
J 746.43 BLA	Blanchette, Peg, Kids' easy knitting projects / Williamson Pub., 2001
J 746.43 BRA	Bradberry, Sarah. Kids knit! : simple steps to nifty projects / Sterling, 2004 Presents basic knitting techniques and instructions for making a backpack, a pillow, a doll, and other simple projects.
J 746.43 CLE	Clewer, Carolyn. Kids can knit : fun and easy projects for your small knitter / Barron's, 2003
J 746.43 INT	Kids knit : six projects, for kids by kids / Interweave Press, 1998 Illustrated explanations of the fundamentals of knitting accompany step-by-step instructions for six knitting projects that were designed by children.
677 KAN	Kandis, Mags Gifted : Lovely Little Things to Knit + Crochet / Interweave Press, 2010
J 746.43 Dav	Davis, Jane. Crochet : fantastic jewelry, hats, purses, pillows & more / Lark Books/Sterling Pub., 2005 This book provides step-by-step instructions for crocheting 30 projects, including game pieces, balls, bags, jewelry, cool stuff for your room, and things to wear.

STEAM2Go Kits available to check out about for Yarn Projects:

Knitting kit	(NPL STEAM2Go kit)
Crochet kit	(NPL STEAM2Go kit)
Loom Knitting kit	(NPL STEAM2Go kit)

Take & Make Supplies Kit: Yarn skein & buttons.

Call the library to ask if a “take & make” kit for Yarn projects is available. Supplies are limited.

Links for Yarn crafts

Knitting projects:

<https://www.thesprucecrafts.com/easy-knitting-patterns-for-new-knitters-2116495>

Crochet projects: <https://www.thesprucecrafts.com/crochet-4162930>

Loom knitting basics: <https://www.goodknitkisses.com/how-to-loom-knit-for-beginners/>

NPL Maker Challenge Guide

Art & Crafts: **Duct Tape Accessories**

Complete the three projects from the book, *Tape It & Make It : 101 Duct Tape activities* by Richela Fabian Morgan

List projects here:

#1

#2

#3

Resources

Books at NPL about Duct Tape crafts

Included in the kit

Kits available:

Duct Tape Crafts (NPL STEAM2Go kit)

Tools & supplies available: ask for a “Take & Make kit for Duct Tape Crafts” to get 2 rolls of duct tape and scissors for your project or use your own from home. Supplies are limited.

Links for more Duct Tape accessories projects:

More ideas for projects here: <https://diyprojectsforteens.com/duct-tape-projects/>

Finished the Challenge?

- Fill out the [“Wrap-It-Up” Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Congratulations!

You have completed this NPL Maker Challenge.



Nevada Public Library

Click on a **CIRCUITRY & ELECTRONICS** activity to see the Challenge Guide:

Analog
Circuits

Arduino
Circuits

Makey-
Makey

Snap
Circuits

littleBits



Nevada Public Library

NPL Maker Challenge Guide

Circuits & Electronics: **Analog Circuits**

This challenge requires the STEAM2Go Circuitry / Analog Circuits kit.

Complete these courses *in order* in Mouse Create

** You will need to create an account or log in to NPL's Mouse Create portal at create.mouse.org. Request the NPL Group code by contacting the library.

- ☐ Light-Up Creature
- ☐ Building with a Breadboard
- ☐ Light Dimmers and Intelligent Sensors
- ☐ Transistors Nightlight

Most of the extra craft materials required for these projects can be found around the home.

If you need supplies, contact the library.

Finished the Challenge?

- ☐ Fill out the ["Wrap-It-Up" Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the Analog Circuits Kit to the library.

Congratulations!

You have completed this NPL Maker Challenge.



Resources about Circuits & Electricity

Books at NPL

Call Number	Author/Title/Summary
E 537 CLA	Claybourne, Anna. Electricity / QEB Pub., 2009
E 537 JEN	Jennings, Terry J. Electricity / Black Rabbit Books, 2009
E 609 BAR	Barr, Catherine The Story of Inventions : A First Book About World-Changing Discoveries / Frances Lincoln Children's Books, 2020
J 500 WIL	Wilkinson, Karen The art of tinkering : meet 150+ makers working at the intersection of art, science & technology / Weldon Owen, 2013
J 530.078 Wil	Williams, Zella. Experiments with physical science / PowerKids Press, 2007
J 621.31 BAR	Bartholomew, Alan. Electric mischief : battery-powered gadgets kids can build / Kids Can Press, 2002
J 621.319 RIL	Riley, Peter D. Circuits & conductors / Smart Apple Media, 2007
J DVD	Electricity : Bill Nye the Science Guy / Disney 2008

Kits available:

Analog Circuits (NPL STEAM2GO Kit)

Links for Analog Circuits

<https://www.instructables.com/Learn-Analog-Digilent-MakerSpace/>

NPL Maker Challenge Guide

Circuits & Electronics: **Arduino**

This challenge requires the STEAM2Go Circuitry / Analog Circuits kit.

Complete these courses *in order* in Mouse Create

** You will need to create an account or log in to NPL's Mouse Create portal at create.mouse.org. Request the NPL Group code by contacting the library.

- ☐ Intro to the Arduino
- ☐ LED Light Chaser
- ☐ Arduino Sound Machine
- ☐ Arduino Nightlight

Finished the Challenge?

- ☐ Fill out the ["Wrap-It-Up" Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the Arduino Kit to the library.

Congratulations!

You have completed this NPL Maker Challenge.



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Resources

Books at NPL about Arduino

Call Number	Author/Title/Summary
629.895 IGO	Igoe, Tom Making Things Talk / Maker Media 2011
J 629.89 BAN	Banzi, Massimo Make : Getting Started With Arduino : The Open Source Electronics Prototyping Platform / Maker Media, 2014
J 629.895 TOD	Todd, Sylvia Sylvia's Super-Awesome Project Book : Super Simple Arduino! / Constructing Modern Knowledge Press 2014

Kits available:

Arduino kit (NPL STEAM2GO kit)

Links for more Arduino projects:

<https://www.instructables.com/Arduino-Projects/>

<https://www.makeuseof.com/tag/10-great-arduino-projects-for-beginners/>

NPL Maker Challenge Guide

Circuits & Electronics: **Makey-Makey**

This challenge requires the STEAM2Go Circuitry / Makey-Makey kit.

Complete the following:

☐ The Human Circuit

** You will need to create an account or log in to NPL's Mouse Create portal at create.mouse.org. Request the NPL Group code by contacting the library.

☐ Hands-On a Makey-Makey lesson

<https://makeymakey.com/blogs/how-to-instructions/lesson-two-hands-on-a-makey-makey>

☐ Is it Conductive lesson

<https://makeymakey.com/blogs/how-to-instructions/lesson-three-what-is-conductive>

Want to do much more with Makey-Makey?

Look through the book, 20 Makey-Makey projects for the Evil Genius, included in the Makey-Makey kit!

Finished the Challenge?

☐ Fill out the ["Wrap-It-Up" Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the Makey-Makey Kit to the library.

Congratulations!

You have completed this NPL Maker Challenge.



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Resources about Makey-Makey

Books at NPL

20 Makey-Makey Projects for the Evil Genius by Aaron & Colleen Graves (in the kit)

Kits available:

Makey Makey kit

(NPL STEAM2GO kit)

Links for more Makey-Makey tips & projects:

<https://makeymakey.com/pages/how-to>

NPL Maker Challenge Guide

Circuits & Electronics: **Snap Circuits**

This challenge requires the STEAM2Go Circuitry / Snap Circuits Jr kit.

Complete at least 10 projects from the Snap Circuits Jr. projects book

<input type="checkbox"/> Log project #1 _____	<input type="checkbox"/> Log project #6 _____
<input type="checkbox"/> Log project #2 _____	<input type="checkbox"/> Log project #7 _____
<input type="checkbox"/> Log project # 3 _____	<input type="checkbox"/> Log project #8 _____
<input type="checkbox"/> Log project #4 _____	<input type="checkbox"/> Log project #9 _____
<input type="checkbox"/> Log project #5 _____	<input type="checkbox"/> Log project #10 _____

Finished the Challenge?

- Fill out the [“Wrap-It-Up” Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the Snap Circuits Jr to the library.

Congratulations!

You have completed this NPL Maker Challenge.



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Resources

Books at NPL about Circuits & Electricity

Call Number	Author/Title/Summary
E 537 CLA	Claybourne, Anna. Electricity / QEB Pub., 2009
E 537 JEN	Jennings, Terry J. Electricity / Black Rabbit Books, 2009
E 609 BAR	Barr, Catherine The Story of Inventions : A First Book About World-Changing Discoveries / Frances Lincoln Children's Books, 2020
J 500 WIL	Wilkinson, Karen The art of tinkering : meet 150+ makers working at the intersection of art, science & technology / Weldon Owen, 2013
J 530.078 Wil	Williams, Zella. Experiments with physical science / PowerKids Press, 2007
J 621.31 BAR	Bartholomew, Alan. Electric mischief : battery-powered gadgets kids can build / Kids Can Press, 2002
J 621.319 RIL	Riley, Peter D. Circuits & conductors / Smart Apple Media, 2007
J DVD	Electricity : Bill Nye the Science Guy / Disney 2008

Kits available:

Snap Circuits Jr kit	(NPL STEAM2GO kit)
Larger Snap Circuits class kit	(MAKER REF / in library use only)

Links for more Snap Circuits Jr projects:

https://www.elenco.com/wp-content/uploads/2017/10/SC-100_REV-H2-3.pdf

NPL Maker Challenge Guide

Circuits & Electronics: **littleBits**

This challenge requires the STEAM2Go Circuitry / littleBits BASE kit.

Complete these projects from the littleBits Base kit

- [projects folder included in kit.](#)

☐ Try these Circuits section of booklet

- ☐ Light meter
- ☐ Morning alarm
- ☐ Intro to DC motor
- ☐ Car Speed
- ☐ Siren

☐ Build these projects from the littleBits booklet

- ☐ Project 1: Tickle Machine
- ☐ Project 2: Prank Handshake
- ☐ Project 4: Flashlight
- ☐ Project 6: Doorbell

Finished the Challenge?

- ☐ Fill out the [“Wrap-It-Up” Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the littleBits kit to the library. CHECK FOR ALL 14 pieces!

Congratulations! You have completed this NPL Maker Challenge.



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Resources

Books at NPL about Circuits & Electricity

Call Number	Author/Title/Summary
E 537 CLA	Claybourne, Anna. Electricity / QEB Pub., 2009
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J 530.078 Wil	Williams, Zella. Experiments with physical science / PowerKids Press, 2007
J 621.31 BAR	Bartholomew, Alan. Electric mischief : battery-powered gadgets kids can build / Kids Can Press, 2002
J 621.319 RIL	Riley, Peter D. Circuits & conductors / Smart Apple Media, 2007
J DVD	Electricity : Bill Nye the Science Guy / Disney 2008

Kits available:

littleBits BASE kit	(NPL STEAM2GO kit)
Larger littleBits STEAM class kit	(MAKER REF / in library use only)

Links for more littleBits projects with the STEAM class kit:

https://lb-community.s3.amazonaws.com/uploads/uploaded_file/asset/2012/STEAM-Student-Set-Invention-Guide.pdf

Click on a **ROBOTICS** activity to see the Challenge Guide:

NOTE: Robot kits are limited to age ranges as listed below.

Sphero
Mini

3rd grade & up

MeepBot

3rd grade & up

OZObot
EVO

4th grade & up

LEGO
WeDo 2.0

2nd-3rd grade

LEGO
EV3

4th grade & up

Botley

(K-3rd grade)

Dash
& Dot

K-5th grade
(coming soon)

Code & Go
Mouse

PreK-2nd grade



Nevada Public Library

NPL Maker Challenge Guide

Robotics: **Sphero Mini**

This challenge requires the STEAM2Go Robotics Sphero Mini kit.
You will also need a smartphone or tablet to complete this challenge.

Complete the following courses with Sphero Mini:

- ☐ Review the Getting Started sheet & the FAQ sheet in the Sphero Mini kit.
- ☐ Install **Sphero EDU** on your device, create an account and complete the following in the app:
- ☐ Search **activities** for “Sphero Baby Steps” and complete the steps. The steps are also printed and included in the STEAM2Go notebook.
- ☐ Complete the Sphero challenge cards #1 through #8 (included in kit) with SpheroEDU app.
<https://sphero-media-sphero-prod.s3.amazonaws.com/cwist/picturesteps/d9/f3/Sphero%20Activity%20Cards.pdf>
- ☐ Just for fun... you can install **Sphero PLAY** on your device to play a game of BOWLING with **Sphero Mini**.

Finished the Challenge?

- ☐ Fill out the [“Wrap-It-Up” Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the Sphero mini Robotics kit to the library. Check for all pieces, PLEASE!
Congratulations!

You have completed this NPL Maker Challenge.



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Resources about Robotics

Books at NPL:

Call Number	Author/Title/Summary	
629.892 CEC	Ceceri, Kathy Making Simple Robots / Maker Media 2015	Book Adult Non-Fiction
629.895 IGO	Igoe, Tom Making Things Talk / Maker Media 2011	Book MakerSpace Collection
680 HAC	Hackett, Chris The Big Book of Maker Skills : Tools & Techniques For Building Great Tech Projects / Weldon Owen Popular Science 2014	Book MakerSpace Collection
J 523.43 RUS	Rusch, Elizabeth. The mighty Mars rovers : the incredible adventures of Spirit and Opportunity / Houghton Mifflin Books for Children, 2012	Book Juvenile/YA Non-Fiction
J 629 .89 BEN	Benedettelli, Daniele The LEGO Mindstorms EV3 Laboratory : Build, Program, and Experiment with Five Wicked Cool Robots! / No Starch Press, 2014	Book MakerSpace Collection
J 629.8 BRA	Brasch, Nicolas Robots of the Future / PowerKids Press, 2013	Book Juvenile/YA Non-Fiction
J 629.8 CAS	Cassriel, Betsy Robot builders! / Mason Crest, 2016	Book Juvenile/YA Non-Fiction

Also available are some fun series about robots in our fiction section:
Just search "robot" in the catalog for a variety of robot adventures!

Kits available:

Sphero Mini w/ challenge notebook & card sets	(NPL STEAM2Go Kit)
Sphero SPK+ Robot	(MAKER REF/in-library use only)

Links for Sphero Mini

Intro to Sphero Edu challenge <https://edu.sphero.com/cwists/preview/52597x>
Find many more free challenges and activities for Sphero at **Edu.sphero.com**

NPL Maker Challenge Guide

Robotics: **Meeper Bot**

This challenge requires the STEAM2Go Robotics MeeperBot kit.

You will also need a smartphone or tablet to complete this challenge.

Complete the following steps with Meeper Bot:

- ☐ Install **Meeper app** on your device.
- ☐ Use LEGO or other bricks to create a unique vehicle with the Meeper Bot base (optional)
- ☐ Build an obstacle course or soccer challenge for the MeeperBot to conquer.
- ☐ Control the MeeperBot with each of the methods in the app to navigate the MeeperBot through the course that you built:
 - ☐ Control Mode (Command, Tank and Touch Drive)
 - ☐ BotCode (drag & drop) directional commands controls
 - ☐ Blockly (scratch-like) controls

Optional: To learn more about Meeper Bot and what it can do, follow the Meeper How-To guide #1 through #16 in the kit notebook. <https://meeperbot.com/pages/how-to-meeper>

Finished the Challenge?

- ☐ Fill out the **"Wrap-It-Up" Form** online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the MeeperBot Robotics kit to the library. Check for all pieces, PLEASE!

Congratulations!

You have completed this NPL Maker Challenge.



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Resources about Robotics

Books at NPL:

Call Number	Author/Title/Summary	
629.892 CEC	Ceceri, Kathy Making Simple Robots / Maker Media 2015	Book Adult Non-Fiction
629.895 IGO	Igoe, Tom Making Things Talk / Maker Media 2011	Book MakerSpace Collection
680 HAC	Hackett, Chris The Big Book of Maker Skills : Tools & Techniques For Building Great Tech Projects / Weldon Owen Popular Science 2014	Book MakerSpace Collection
J 523.43 RUS	Rusch, Elizabeth. The mighty Mars rovers : the incredible adventures of Spirit and Opportunity / Houghton Mifflin Books for Children, 2012	Book Juvenile/YA Non-Fiction
J 629 .89 BEN	Benedettelli, Daniele The LEGO Mindstorms EV3 Laboratory : Build, Program, and Experiment with Five Wicked Cool Robots! / No Starch Press, 2014	Book MakerSpace Collection
J 629.8 BRA	Brasch, Nicolas Robots of the Future / PowerKids Press, 2013	Book Juvenile/YA Non-Fiction
J 629.8 CAS	Cassriel, Betsy Robot builders! / Mason Crest, 2016	Book Juvenile/YA Non-Fiction

Also available are some fun series about robots in our fiction section:
Just search "robot" in the catalog for a variety of robot adventures!

Kits available:

MeepBot Robotics kit	(NPL STEAM2Go Kit)
MeepBot Classroom kit	(MAKER REF/NPL Program use only)

Links for MeepBot

Frequently asked questions/troubleshooting

<https://meepbot.com/pages/trouble-shooting-faqs>

DEMCO activity guide for MeepBot

https://resources.demco.com/meepbotactivityguide_demco.pdf

NPL Maker Challenge Guide

Robotics: **OZOBot EVO**

This challenge requires the MAKER Robotics OZOBot kit.

*This robot kit is only available to use **IN THE LIBRARY.***

You will also need a smartphone or tablet to complete this challenge.

Complete these steps with Ozobot:

☐ **Color Coding.**

Use color codes with markers/paper to code Ozo offline!

- ☐ Create three courses on the blank tracks included in the kit.
- ☐ Use intricate codes (a sheet of codes is included in the Ozobot kit. Examples include: tornado, nitro, slow, etc) and have Ozobot complete each course without issue.

☐ **Install Ozobot EVO app** on your device.

☐ **Explore Ozoblockly Drag & Drop coding.**

Complete the following challenges in OzoBlockly:

- ☐ Play Shape Tracer game to complete all 10 levels.
- ☐ Play Shape Tracer 2 game to complete all 10 levels.
- ☐ Play Ozotown and complete all 10 levels.

Finished the Challenge?

- ☐ Fill out the ["Wrap-It-Up" Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the Ozobot Robotics kit to the library. Check for all pieces, PLEASE!

Congratulations!

You have completed this NPL Maker Challenge.



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Resources about Robotics

Books at NPL:

Call Number	Author/Title/Summary	
629.892 CEC	Ceceri, Kathy Making Simple Robots / Maker Media 2015	Book Adult Non-Fiction
629.895 IGO	Igoe, Tom Making Things Talk / Maker Media 2011	Book MakerSpace Collection
680 HAC	Hackett, Chris The Big Book of Maker Skills : Tools & Techniques For Building Great Tech Projects / Weldon Owen Popular Science 2014	Book MakerSpace Collection
J 523.43 RUS	Rusch, Elizabeth. The mighty Mars rovers : the incredible adventures of Spirit and Opportunity / Houghton Mifflin Books for Children, 2012	Book Juvenile/YA Non-Fiction
J 629 .89 BEN	Benedettelli, Daniele The LEGO Mindstorms EV3 Laboratory : Build, Program, and Experiment with Five Wicked Cool Robots! / No Starch Press, 2014	Book MakerSpace Collection
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Also available are some fun series about robots in our fiction section:
Just search "robot" in the catalog for a variety of robot adventures!

Kits available:

OzoBot Robotics kit	(NPL STEAM2Go Kit)
OzoBot Educators kit / Class pack	(MAKER REF/NPL Program use only)

Links for OzoBot

Ozobot Color Code pdf printable

<https://files.ozobot.com/stem-education/Ozobot-Color-Codes-Chart.pdf>

Ozobot Color Code Experience pack pdf

<https://play.ozobot.com/print/ozobot-evo-experience-pack.pdf>

Ozoblockly Coding/ Shape Tracer Challenge

<https://games.ozoblockly.com/shapetracer-basic>

Ozotown Challenge

<https://games.ozoblockly.com/ozotown-basic>

Nevada Public Library (Nevada, MO)

NPL Mini-Maker Challenge Guide

(2nd & 3rd grade)

Robotics: **LEGO WeDo 2.0**

This challenge requires the MAKER Robotics LEGO WeDo2.0 kit.

*This robot kit is only available to use **IN THE LIBRARY.***

A NPL Chromebook or Android tablet is available to use with this kit in the library.

Complete the following steps with LEGO WeDo2.0 kit:

- ☐ Install LEGO WeDo 2.0 Education app on your device or go to **education.lego.com** on your PC or Chromebook
- ☐ Explore the Mini Lessons in WeDo 2.0 classroom
<https://education.lego.com/en-us/lessons/wedo-2-mini-lessons>
- ☐ Complete the Milo the Science Rover 3-part lesson to learn the basics of WeDo 2.0
[**Milo part 1**](#)
[**Milo part 2**](#)
[**Milo part 3**](#)

*Each lesson comes with instructions for the build, instructions for commands plus help videos and links if needed.

Finished the Challenge?

- ☐ Fill out the [**"Wrap-It-Up" Form**](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the LEGO WeDo2.0 Robotics kit to the library. Check for all pieces, PLEASE!

Congratulations!

You have completed this NPL Maker Challenge.



Nevada Public Library

NPL Maker Challenge Guide

Robotics: **LEGO EV3 Mindstorms**

This challenge requires the MAKER Robotics LEGO EV3 kit.

*This robot kit is only available to use **IN THE LIBRARY**.*

A NPL Chromebook or Android tablet is available to use with this kit in the library.

Complete the following steps with LEGO EV3 kit:

- ☐ Install **MINDSTORMS EV3 LEGO education app** onto your tablet or open it with Chrome on laptop or Chromebook.
- ☐ Plug in your power pack so that it is ready to go when you are!
- ☐ Working within the **Ev3 Education app**, complete the following;
 - ☐ Review the “Let’s Prepare” section to learn about POWER!
 - ☐ Use a Large Motor (<5 mins)
 - ☐ Use a Touch Sensor (15 mins)
 - ☐ Make a Straight Move (30 mins / build time!)
 - ☐ Make it Turn (5 mins)
 - ☐ Detect an Object (25 mins / more building)
 - ☐ Curved Move
 - ☐ Move Object
 - ☐ Stop at Object
 - ☐ Stop at Angle
 - ☐ Stop at Line
 - ☐ Follow a Line

Finished the Challenge?

- ☐ Fill out the [“Wrap-It-Up” Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the LEGO EV3 Robotics kit to the library. Check for all pieces, PLEASE!

Congratulations!

You have completed this NPL Maker Challenge.

NPL Mini-Maker Challenge Guide

(grades K-5)

Robotics: **Botley**

This kit is for grades K-5 only

*This robot kit is only available to use **IN THE LIBRARY.***

Complete the following steps with a parent using Botley (Grades K-1)

- Complete the challenges #1-8 included in the MINI MAKER folder. The solutions to the mazes can be found in the Parent Folder.
<https://blog.learningresources.com/coding-botley-printables/>

Complete the following steps with Botley (Grades 2-3)

- Explore what Botley can do with the Botley Basics Section of the Maker folder. (TPT download *can not* be posted online)
- Complete the Beginner Botley Challenges #1 through #10 using the color squares in the kit
- Complete Botley Challenges #11-#22 using the Activities & Playground pieces

Finished the Challenge?

- Fill out the ["Wrap-It-Up" Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the Botley kit to the desk. Check for all pieces, PLEASE!

Congratulations!

You have completed this NPL Maker Challenge.



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NPL Mini-Maker Challenge Guide

(PreK-2nd grade)

Robotics: **Code & Go Mouse**

This kit is for grades PreK-2nd only

Complete the following steps with a parent using the Code & Go Mouse kit:

Each Code & Go Mouse STEAM2Go kit is based on a theme.

Use the puzzles and playmat in the kit to teach the basics of directional coding to the mouse!

Challenge your child to do different activities with the puzzles:

Community Helpers Kit:

- ☐ Match the worker to the Location in the city.
- ☐ Parent can name the type of help they need, child chooses location & codes mouse to go there.

Alphabet Zoo Kit:

- ☐ Draw a letter from the cards. Code mouse to go to that letter.
- ☐ Draw an animal from the cards. Code mouse to match animal.
- ☐ Code mouse to spell out letter of name on playmat.

Finished the Challenge?

- ☐ Fill out the ["Wrap-It-Up" Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the Code & Go Mouse Robotics kit to the library.

Check for all pieces, PLEASE!

Congratulations!

You have completed this NPL Maker Challenge.



Nevada Public Library



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NPL Mini-Maker Challenge Guide

(grades K-5th)

Robotics: **Dash & Dot**

This kit is for grades K-5

*This robot kit is only available to use **IN THE LIBRARY.***

An NPL Android tablet is available to use with this kit in the library.

Complete the following steps with Dash & Dot robots:

Finished the Challenge?

- Fill out the ["Wrap-It-Up" Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the Dash & Dot Robotics kit to the desk.

Check for all pieces, PLEASE!

Congratulations!

You have completed this NPL Maker Challenge.



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Click on a **CONTENT CREATION** activity to see the Challenge Guide:

Creative
Writing

Costume
Design

Green
Screen

Stop-Motion
Animation

Movie
Making
&
Editing

NPL Maker Challenge Guide

Content Creation: **Creative Writing**

Complete 3 of the following:

- ☐ Write a haiku.
- ☐ Write a poem about your favorite season.
- ☐ Write a limerick.
- ☐ Write a short story about your favorite trip.
- ☐ Write a book review.

Finished the Challenge?

- ☐ Fill out the ["Wrap-It-Up" Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Congratulations!

You have completed this NPL Maker Challenge.

Resources about Creative Writing:

Books at NPL:

NEW! Rip the Page: Adventures in Creative Writing by Karen Benke

Writer to Writer: from think to ink by Gail Carson Levine

Get inspired by reading any book in the poetry (call number 811) section of the library

Kits available for Creative Writing projects:

n/a

Links & Websites for online tutorials on Creative Writing instruction

Young writers at NaNoWriMo	ywp.nanowrimo.org
Power Poetry	powerpoetry.org
How to write a Haiku	https://www.poetry4kids.com/lessons/how-to-write-a-haiku/
How to write a Limerick	https://powerpoetry.org/actions/how-write-limerick
Book Riot Book Review	https://bookriot.com/how-to-write-a-book-review/

NPL Maker Challenge Guide

Content Creation: **Costume Design**

Complete the three of following:

- ☐ **Mask.** Make and/or decorate a costume mask.
- ☐ **Assembly.** Assemble a costume using existing articles of clothing.
- ☐ **Make-Up.** Apply special effects make-up on yourself or a friend.
- ☐ **Cosplay.** Make a cosplay element.
- ☐ **Construction.** Sew a costume using a pattern or create a prop for a production.

Finished the Challenge?

- ☐ Fill out the [“Wrap-It-Up” Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Congratulations!

You have completed this NPL Maker Challenge.

Resources about Costumes & Stage Design

Books at NPL

646.4

D285 Elegantly frugal costumes, the poor man's do-it-yo / Meriwether Dearing, Shirley

Kits available:

n/a

Tools & supplies available:

Sewing machine (MAKER REF / In library use only)

Supplies:

Paint, cardboard, glue, cutting tools

Links for more Costume Design tips & projects:

Get inspired:

<https://www.denofgeek.com/movies/top-50-movies-with-ingenious-costume-design/>

Theatre masks: https://costumes.lovetoknow.com/Theatre_Masks

Costume Design: <https://www.instructables.com/Tips-for-the-reluctant-costume-designer/>

NPL Maker Challenge Guide

Content Creation: **Green Screen**

*This MAKER kit is only available to use **IN THE LIBRARY.***
A NPL Digital Camcorder or iPad is available to use with this kit in the library.

This challenge required you to check out “Green Screen Makerspace Project Book” available at NPL.

Create three projects from the Green Screen projects book.

Log your projects here:

#1 _____

#2 _____

#3 _____

Finished the Challenge?

- ☐ Fill out the [“Wrap-It-Up” Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Congratulations!

You have completed this NPL Maker Challenge.



Nevada Public Library

Resources

Books at NPL about Movie Making & Green Screen photography

Digital Filmmaking for Kids

Green Screen Makerspace Projects Book

Kits available:

Director's clapper, tripod, mic (MAKER REF / in library use only)

Studio lights set (MAKER REF / in library use only)

iPad (MAKER REF / in library use only)

Links for more Movie Creation tips & Green Screen projects:

<http://www.makerspaceforeducation.com/green-screen-technology.html>

<https://cooltoolsforschool.net/green-screen-fun/>

Book talks that Rock (commonsense.org)

<https://www.commonsense.org/education/lesson-plans/book-talks-that-rock>

NPL Maker Challenge Guide

Content Creation: **Stop-Motion Animation**

“Getting Started with Stop Motion” instructions on next page

Create two stop-motion projects. You could use:

- ☐ **Human.** Create a stop motion film starring your friends or family members. Have them take tiny movements between frame snapshots then build your movie clip.
- ☐ **Whiteboard.** Use a whiteboard and colored markers to create a stop motion film.
- ☐ **Paper cut-out.** Draw shapes or cut out images to create an animated story.
- ☐ **Everyday Objects.** Look around you. Any object, including toy or figurine, that can be moved can be used to make a stop motion film.
- ☐ **STEAM2Go Kit.** NPL has two stop-motion kits available for checkout.
 - LEGO Animation Studio (NPL STEAM2Go kit)
 - MINECRAFT Stop-Motion (NPL STEAM2Go kit)

Finished the Challenge?

- ☐ Fill out the [“Wrap-It-Up” Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.
- ☐

Return the Stop Motion kit to the library.

Congratulations!

You have completed this NPL Maker Challenge.



Nevada Public Library

Getting Started with Stop-Motion Animation:

You will need:

- Camera (digital camera, or even a phone)
- Tripod (or something to hold your camera in the same position)
- Computer or app (if using tablet or phone)
- Animating app (Stop-Motion Studio) or a program, such as MonkeyJam, SAM Animation, Dragon Animation or even iMovie, or Windows Movie Maker.
- Materials needed to create your scenes and characters (this can be paper, clay, paints, etc.)
- Writing Paper
- And, of course, your IMAGINATION!

Step-by-Step Instructions are available by Instructables:

<https://www.instructables.com/Make-A-Stop-Motion-Animation-For-Beginners/>

** Makers may borrow NPL's iPad that has a stop-motion app installed on it, but you will be limited to in-library use only. Tablets are not available for checkout!

Links for more Stop Motion Animation tips & projects:

What is Stop-Motion <https://www.ikitmovie.com/what-is-stop-motion/>

Ideas for beginners in Stop Motion Animation

<https://www.ikitmovie.com/stop-motion-ideas-for-beginners/>

NPL Maker Challenge Guide

Content Creation: **Movie Making & Editing**

Complete these courses *in this order* in Mouse Create

** You will need to create an account or log in to NPL's Mouse Create portal at create.mouse.org. Request the NPL Group code by contacting the library.

- ☐ Take your shot.
- ☐ Drawing a great story
- ☐ Getting Good Sound
- ☐ Making Meaning with Images
- ☐ Making a Movie Trailer

Finished the Challenge?

- ☐ Fill out the ["Wrap-It-Up" Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Congratulations!

You have completed this NPL Maker Challenge.

Click on a **GAME DESIGN** activity to see the Challenge Guide:

Tabletop
Game
Design

Programming
&
Python

Scratch
Developer

Bloxels

OSMO
Coming Soon
Ages 7 & up



Nevada Public Library

NPL Maker Challenge Guide

Game Design: **Tabletop Game Design**

Complete these courses *in this order* in Mouse Create:

** You will need to create an account or log in to NPL's Mouse Create portal at create.mouse.org. Request the NPL Group code by contacting the library.

- ☐ Intro to Game Design
- ☐ Core Mechanics
- ☐ Goals, Obstacles & Chance
- ☐ Found Object Game

Finished the Challenge?

- ☐ Fill out the ["Wrap-It-Up" Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Congratulations!

You have completed this NPL Maker Challenge.

Resources about Tabletop Game Design

Books at NPL

The Everything Tabletop Games Book by Bebo

Board Games to Create and Play by Kevin Davis

Kits available: n/a

Links for more Board Game Design inspiration and tips:

10 steps to design a Board Game

<https://youtu.be/VgEt7PysQgc>

Instructables steps to TTG design

<https://www.instructables.com/How-To-Design-Board-Games/>

Did you know that you can check out a variety of tabletop games from the library? Search our catalog for “board game” to find out what is available.



NPL Maker Challenge Guide

Game Design: **Programming & Python**

Complete these courses *in this order* in Mouse Create.

** You will need to create an account or log in to NPL's Mouse Create portal at create.mouse.org. Request the NPL Group code by contacting the library.

- ☐ People Programming
- ☐ Text Your Computer
- ☐ Hello World
- ☐ 8-bit Pixel Artist

Resources about Programming & Python

Books at NPL

Coding Projects in Python by DK Media

Creating Coding in Python by Sheena Vaidyanathan

Kits available: n/a

Links for more Programming Game Design inspiration and tips:

Python for Beginners tutorial <https://docs.python.org/3/tutorial/>

Invent your own computer games with Python; 2nd edition [by Al Sweigart](#)

Want to learn more about programming with Python? Take the Raspberry Pi coding challenge next.

Finished the Challenge?

- ☐ Fill out the ["Wrap-It-Up" Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Congratulations!

You have completed this NPL Maker Challenge.

NPL Maker Challenge Guide

Game Design: **Scratch Developer**

Complete these courses *in this order* in Mouse Create.

** You will need to create an account or log in to NPL's Mouse Create portal at create.mouse.org. Request the NPL Group code by contacting the library.

- ☐ What is Scratch
- ☐ Games from Scratch
- ☐ It's the Remix
- ☐ 10 blocks

Resources about Scratch

Books at NPL

Super Scratch Programming Adventure! by Hui, Edmond Kim Ping

Coding Games in Scratch by Jon Woodcock

25 Scratch 3.0 Games for Kids: a playful guide to coding by Max Wainewright

Kits available: n/a

Links for more Programming Game Design inspiration and tips:

Bonus course in Mouse Create : Step-by-Step Scratch

Udemy course (not endorsed by NPL)

<https://www.udemy.com/course/scratch-game-programming/>

Finished the Challenge?

- ☐ Fill out the ["Wrap-It-Up" Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Congratulations!

You have completed this NPL Maker Challenge.



NPL Maker Challenge Guide

Game Design: **Bloxels**

Complete these steps with the Bloxels kit:

- ☐ Download the Bloxels app to your device then log in as a **student** with class code included in the kit.
- ☐ Build your first character
- ☐ Build your first room
- ☐ Playtest your room & character
- ☐ Decorate your Bloxel room
- ☐ Capture a screenshot of your game creation and email it to us at info@nplmo.org

Resources about Bloxels and Video Game Design

Books at NPL

Video Game Designer by Alix Wood

Hacks for Minecrafters : MODS by Megan Miller

Kits available:

Bloxels kit (original board)

(NPL STEAM2Go Kit)

Bloxels Star Wars board

(NPL STEAM2Go Kit)

Links for more Programming Game Design inspiration and tips:

Bonus course in Mouse Create : Step-by-Step Scratch

Udemy course (not endorsed by NPL)

<https://www.udemy.com/course/scratch-game-programming/>

Finished the Challenge?

- ☐ Fill out the [“Wrap-It-Up” Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Return the Bloxels kit to the library.

Congratulations!

You have completed this NPL Maker Challenge.



Click on a **CODING** activity to see the Challenge Guide:

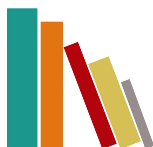
Offline
Coding

HTML
&
CSS

Raspberry
Pi

Javascript

Website
Building
(coming soon)
Glitch



Nevada Public Library

NPL Maker Challenge Guide

Coding: **Offline Coding**

Complete two of the following:

- ☐ **Robot Turtles Coding Game.** Check out the Offline Coding STEAM2Go kit and play Robot Turtles game with a friend for at least 30 minutes.
- ☐ **Binary Message.** On paper, create a message using binary alphabet.
- ☐ **Binary Name.** Write your name in binary in a creative and artistic way using paints, markers, or other materials such as beads.
- ☐ **PB & J.** Write the steps to follow in making a peanut butter and jelly sandwich. Go over the steps with a family member to see if you wrote your 'code' clearly enough to follow it exactly.

Finished the Challenge?

□ Fill out the ["Wrap-It-Up" Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Congratulations!

You have completed this NPL Maker Challenge.

Resources about Coding

Books at NPL

Coding for Kids by Camille McCue

Unbored by Joshua Glenn

Kits available:

Offline Coding Kit

(NPL STEAM2Go kit)

Links for more Offline Coding fun:

<http://info.thinkfun.com/stem-education/5-super-cool-offline-coding-activities>

<https://stemeducationguide.com/screen-free-coding-activities>

NPL Maker Challenge Guide

Coding: **HTML & CSS**

Complete these courses *in this order* in Mouse Create.

** You will need to create an account or log in to NPL's Mouse Create portal at create.mouse.org. Request the NPL Group code by contacting the library.

- ☐ Tag Tag Revolution
- ☐ Source Whisperer
- ☐ Make a Simple Website with Glitch
- ☐ HTML & CSS Relay

Find resources and lots of other information on the next page!

Finished the Challenge?

- Fill out the ["Wrap-It-Up" Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Congratulations!

You have completed this NPL Maker Challenge.

Resources about Coding

Books at NPL

Coding for Kids by Camille McCue

Unbored by Joshua Glenn

Girls who Code by Reshma Saujani

Get Coding by Young Rewired State

Beginner's Step-by-Step Coding Course by DK (2020)

Kits available: n/a

Links for more Coding tutorials & tips:

Codemoji <https://www.codemoji.com/courses/>




For older coders <https://learn.shayhowe.com/html-css/>

NPL Maker Challenge Guide

Coding: **Javascript**

Complete these courses *in this order* in Mouse Create.

** You will need to create an account or log in to NPL's Mouse Create portal at create.mouse.org. Request the NPL Group code by contacting the library.

-  Javascript Generator
-  Javascript Takeover
-  Javascript Chatbox

Find resources and lots of information on the next page!

Finished the Challenge?

- Fill out the [“Wrap-It-Up” Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Congratulations!

You have completed this NPL Maker Challenge.

Resources about Coding

Books at NPL

Coding for Kids by Camille McCue

Unbored by Joshua Glenn

Girls who Code by Reshma Saujani

Get Coding by Young Rewired State

Beginner's Step-by-Step Coding Course by DK (2020)

Kits available: n/a

Links for more Coding tutorials & tips:

Codemoji <https://www.codemoji.com/courses/>

For older coders <https://learn.shayhowe.com/html-css/>

Quick free tutorial to JS <https://www.learn-js.org/>





NPL Maker Challenge Guide

Coding: **Raspberry Pi**

This challenge requires the STEAM2Go Coding / Raspberry Pi kit.

Complete these courses *in this order* in Mouse Create.

** You will need to create an account or log in to NPL's Mouse Create portal at create.mouse.org. Request the NPL Group code by contacting the library.

-  Physical Computing with Raspberry Pi
-  Raspberry Pi LED light chaser
-  Raspberry Pi Nightlight
-  Raspberry Pi Sound Machine

Find resources and more information on next page!

Finished the Challenge?

- Fill out the ["Wrap-It-Up" Form](#) online to enter the monthly **Mystery Maker Mission prize drawing** and to track your progress through the challenges.

Congratulations!

You have completed this NPL Maker Challenge.

Resources about Raspberry Pi

Books at NPL

Adventures in Raspberry Pi by Carrie Anne Philbin

Raspberry Pi Project workbook by Sway Grantham

Kits available:

Raspberry Pi kit (NPL STEAM2Go kit)

Links for more information about Raspberry Pi:

Beginners Guide to Raspberry Pi

<https://www.freecodecamp.org/news/beginners-guide-to-raspberry-pi-6e55080fdaaf/>

Ideas for Raspberry Pi projects for all ages

<https://www.kidscodecs.com/raspberry-pi-projects/>

Click on a **DIGITAL FABRICATION** activity to see the Challenge Guide:

CAD / 3-D
Design

Vinyl
Cutting
(coming soon)
Cricut

Graphic
Design

CNC
Laser
Engraver
(coming soon)

3-D
Printing
(coming soon)

Digital Fabrication Units Coming SOON!

And here goes your text.

Click on a **MAKER TOOLS** activity to see the Challenge Guide:

MAKERSPACE
SAFETY

SOLDERING

Using a Saw

Using a Drill

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