



Library Guide



A six-session program for libraries introducing preschoolers and their families to computational thinking



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Introduction

Librarians make a special contribution to children’s lives by creating environments that welcome many forms of expression, creativity, and interdisciplinary learning. As an informal learning space with access to technology and the Internet, and with a commitment to bridging the digital divide, libraries are an ideal place to introduce children to computational thinking—skills children need as they progress in school and in life. Welcome to AHA! Island—a new program for preschoolers that makes it fun to learn computational thinking.



What Is Computational Thinking?

Computational thinking (CT) is a creative way of thinking that enables children to identify and systematically solve problems. It is applicable to a wide range of disciplines, including math, science, engineering, and literacy. Computational thinking is not the same thing as coding or computer programming, but it is a precursor that can help preschool children learn how to solve problems in a way that could be carried out by a computer.

CT is something that can be learned at a young age, and it can be practiced in non-programming contexts (in other words, without a computer). Just like children sing the alphabet before they learn to read, or count before they learn addition and subtraction, preschoolers can practice basic CT skills through games and hands-on activities, which can set the groundwork for more complex skills later on.

There are a number of core skills behind computational thinking. AHA! Island focuses on three that are engaging and age-appropriate for preschoolers:

<p>Create, Test, Improve!</p> <p>Use a three-step process to create something new.</p> <ul style="list-style-type: none">• Create: Make something.• Test: See how well it works.• Improve: Use what you learned from testing to make it better.	<p>Step It Out!</p> <p>When you need to solve a problem or complete a task, it can help to:</p> <ul style="list-style-type: none">• Think about the steps you need to do.• Then do the steps in order.	<p>Make It Work!</p> <p>When something is not working the way you want it to, you can:</p> <ul style="list-style-type: none">• Check Your Steps: Figure out if there’s a problem.• Make It Work: Come up with a way to fix it.
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Families may not realize it, but they use these computational thinking skills every day! When parents perfect a recipe, they probably use the three-step process, **create, test, improve!** When they plan an afternoon of running errands, they **step it out**—they think about the tasks they need to complete and decide on the order to do them in. And when family members face a problem like trying to fix the TV remote, they **make it work** by figuring out what the problem is and then coming up with a solution.

Program Overview

Here's how the AHA! Island library program is structured:

- There are six sessions. We recommend one session a week for six weeks.
- Three computational thinking skills will be introduced. Each skill is practiced over two sessions.
- The sessions are one hour long. (If you have more time, we recommend extending each session by 15 minutes. This will ensure that you have enough time for discussion with families at the beginning and end of the session.)
- Each session incorporates videos, hands-on activities, and a book to read aloud.
- Go to the AHA! Island website to access the videos and download PDFs of the activities.

➔ **URL:** ahaisland.org
➔ **Username:** [aha](#)
➔ **Password:** [island](#)

Session Overview

Here's what happens in each session:



1 Watch the Story

The video shows the AHA! Island characters using a computational thinking skill to solve a problem.



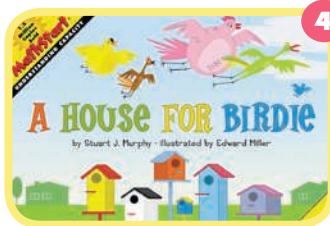
2 Do the Activity

The hands-on activity helps families practice the CT skill introduced in the video.



3 Watch the Music Video or a Live-Action Video

A fun, short music video or live-action video with real kids reinforces the CT skill families are practicing in the session.



4 Read a Book

Families listen to a book you'll read aloud that ties into the theme of the activity and extends their learning.

Families also have more opportunities to practice computational thinking skills at home. At the end of each session, you'll offer them additional activities, access to AHA! Island videos online, and book recommendations.

Create, Test, Improve!

Design a Bridge

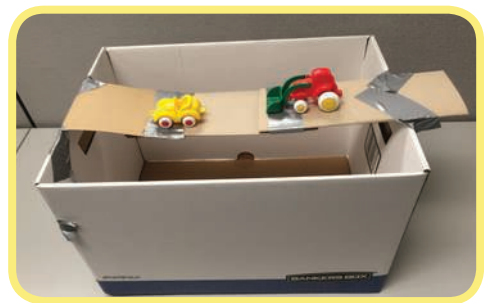
Children and their parents or caregivers are introduced to computational thinking and what will happen over the next six sessions. In this session, they'll learn about the first CT skill, which is a three-step process for making something new called **create, test, improve!** In this activity, they'll practice these three steps as they design a bridge for a toy car to travel across.



What You Need for the Session

Each family will need:

- Toy car(s) or wagon(s)
- Container, such as a tub or box (about 14"–18" wide)
(The bridges will be built across the container.)
- Household items to make the bridges, such as rulers, paint sticks, construction paper, or cardboard (The items should be shorter than the containers.)
- Optional: If you're using waterproof tubs, consider providing water—it's fun for children to build their bridge over real water! (However, be prepared for spills or extra cleanup.)
- Tape, string, scissors
- *Design a Bridge* handout



You'll need:

- An Internet-enabled computer with a projector or monitor to view the following videos with families:
 - *Shivery Delivery*
 - *Create, Test, Improve!*
- Read-aloud book, *Tinyville Town Gets to Work!* by Brian Briggs

What to Send Home

Each family will need:

- *Build a House* handout
- *Parent Overview: Create, Test, Improve!* handout
- If your program is also supplying books to accompany the take-home activities, provide *A House for Birdie* by Stuart J. Murphy.

What to Prepare Ahead of Time

1. Do the activity on your own before leading it with families.
2. Gather materials and place them in a location where families can easily access them.

3. Go to the AHA! Island website: ahaisland.org

➔ Username: aha ➔ Password: island

Print and make copies of the following for each family:

- *Design a Bridge* handout
 - *Build a House* handout
 - *Parent Overview: Create, Test, Improve!* handout
4. Preview these videos on the website: *Shivery Delivery* and *Create, Test, Improve!*
Set up a computer with projector to show the videos to families.
 5. If you are sending a book home with families, gather the copies.

Greet & Share (10 minutes)

1. Welcome families and introduce yourself. Then have families introduce themselves and share why they wanted to participate in the program.
2. Give a brief overview of AHA! Island and computational thinking. Say:
 - *We are going to meet for six sessions to have fun learning about something called computational thinking.*
 - *Yes—"computational thinking" sure is a mouthful! But by the end of today, you'll see it's something every preschooler can learn. Computational thinking is a creative way of thinking that can help all of us solve problems in more organized ways.*

- Practicing these skills now helps prepare children to be successful in school. And it can also help children learn coding and computer programming when they get older.
- Just as you help your child learn to read by singing the alphabet, you can help your child learn CT by doing simple problem-solving activities together.
- During each session, we'll watch videos, do an activity, and read a book together. After each session you'll leave with an activity handout to do at home. When you come back for our next session, you can share what you did at home.
- If you want, you can text or email me pictures of you and your child doing the take-home activity before we meet again. I can show them on the projector at our next session.

Watch the Story

(10 minutes)

1. Introduce the video. Tell families:

- We're going to watch a video about a family of monkeys and their animal friends. They all live on AHA! Island.
- The first CT skill we're going to explore together is called **create, test, improve!** When you want to make something, you can use a three-step process. First you **create** something new, then you **test** it out, and then you use what you learned from the **testing** to **improve** it. **Create, test, improve!**
- Let's watch the characters **create** a way to make an ice cream tray that can carry seven ice cream cones at the same time!



2. Show the video: Shivery Delivery

3. Ask children:

- What are some things the monkeys thought of using to **create** the ice cream tray? (aluminum foil, fabric, paper, wood)
- What did they find out when they **tested** them? (The ice cream cones wouldn't stand up. Some things were too weak or floppy, like the foil, fabric, and paper. The wood was strong, but they couldn't poke holes in it.)
- How did they **improve** their tray? (They made a new tray out of cardboard. They could poke holes in the cardboard, and it was sturdy.)

4. Tell families:

- Let's do an activity using the same three steps the monkeys used: **create, test, improve!** In this activity, you'll **create** a bridge for a toy car to drive on, **test** it to see how it works, and then **improve** it.

Do the Activity (20 minutes)

1. Distribute the handout, *Design a Bridge*, and have families turn to the second page. Families should follow the directions to **create**, **test**, and **improve** their bridge.
2. Circulate and ask questions that encourage children to explain their design or make improvements, such as:
 - Tell me how you **created** your bridge.
 - How can you **test** it to see if it's strong enough?
 - Can you think of ways to **improve** your bridge?
3. When families are done building their bridges, discuss the activity as a group. Ask children:
 - What did you notice when you **tested** your bridge?
 - What changes did you make to **improve** it?
 - Did you **test** your bridge a second time? How did it go?

TIP: The Parents' Role

Encourage parents to help out, but let their child make most decisions and build most of the bridge. If you notice parents doing more than their share, circulate to the family and ask the child questions about her bridge. Directing questions at the child reminds parents that their job is to support their child. Playing a supporting role allows their child to gain experience and build confidence in solving problems!

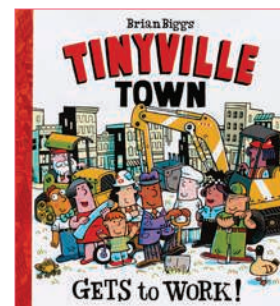
Watch the Music Video (5 minutes)

1. Tell families:
 - The AHA! Island characters use the same three steps that we used to build our bridges. Let's watch another video with a song that helps us remember how to **create**, **test**, and **improve**.
2. Show the video: *Create, Test, Improve!*



Read a Book (10 minutes)

1. Invite children to gather around for a story. Read *Tinyville Town Gets to Work!* Say:
 - Now we're going to read a book about building a new bridge.
2. Ask:
 - Why does the new bridge need to be wider and stronger than the old one?
 - If you were building a bridge, which job would you like to have? Why?



Wrap-Up (5 minutes)

1. Review the session. Tell families:
 - Today we practiced **creating** bridges, **testing** them out, and **improving** them. You can use the same three steps to make almost anything!
 - Before our next session, I'd like you to practice the three steps by doing an activity at home. This time, you're going to build a house! You'll use things that you have around your home.
 - When you're done, take pictures of the house you **created**, send them to me, and we'll share them when we get together again.
 - I'm also giving you a handout that explains a little more about computational thinking and the three-step process: **create, test, improve!**
2. Distribute the *Parent Overview: Create, Test, Improve!* handout and the *Build a House* handout.
 - Explain to parents that the activity handout is very similar to the one they used today—it lists the videos they should watch, instructions to do the activity, and the book to read.
 - Pull up the website on your computer or projector and show parents how to log into the website and find the videos. If parents have a computer or a smart phone, they can watch the videos with their children when they do the activity at home.
 - Explain that if parents are unable to access the web to watch the videos, they can still do the activity and read the book.
3. If your program is supplying books to accompany the take-home activity, distribute *A House for Birdie* by Stuart J. Murphy. Explain that along with the *Build a House* activity and the videos, parents can read this book to their children.



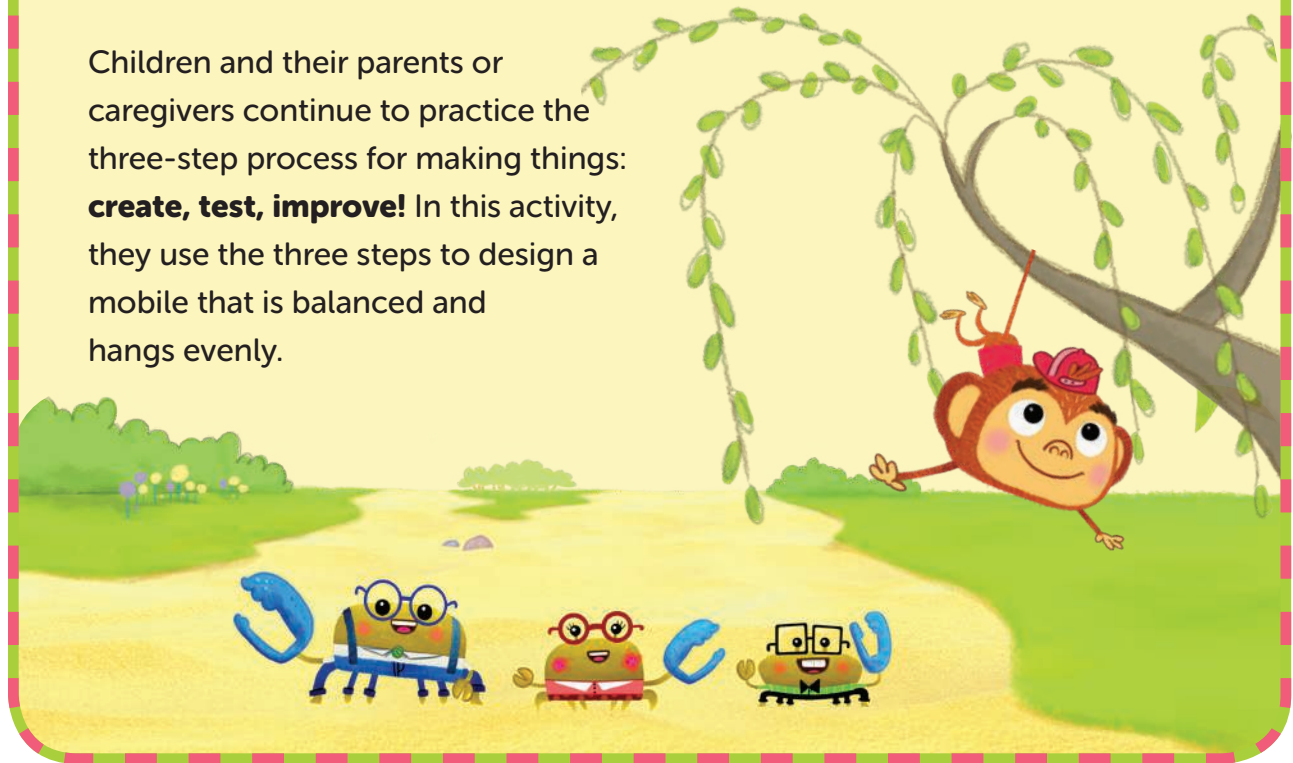
For the Next Session

Consider asking families to bring a few small toys, photos, drawings, or other small objects to the next session. They will use these to make a mobile.

Create, Test, Improve!

Make a Mobile

Children and their parents or caregivers continue to practice the three-step process for making things: **create, test, improve!** In this activity, they use the three steps to design a mobile that is balanced and hangs evenly.



What You Need for the Session

Each family will need:

- A clothes hanger
- String
- Toys, photos, drawings, or other small objects (Consider asking parents to bring some of these items from home.)
- Optional: tape
- *Make a Mobile* handout



You'll need:

- An Internet-enabled computer with a projector or monitor to view the following videos with families:
 - *Making a Racket Playing Whack-It!*
 - *Make It Better*
- Read-aloud book, *Just a Little Bit* by Ann Tompert

What to Send Home

Each family will need:

- *Create an Obstacle Course* handout
- *Design a Pillow* handout
- If your program is also supplying books to accompany take-home activities, provide *We're Going on a Bear Hunt* by Michael Rosen and *The Perfect Pillow* by Eric Pinder.

What to Prepare Ahead of Time

1. Do the activity on your own before leading it with families.
2. Gather materials and place them in a location where families can easily access them.

3. Go to the AHA! Island website: ahaisland.org

➡ Username: **aha** ➡ Password: **island**

Print and make copies of the following for each family:

- *Make a Mobile* handout
 - *Create an Obstacle Course* handout
 - *Design a Pillow* handout
4. Preview these videos on the website: *Making a Racket Playing Whack-It!* and *Make It Better*. Set up a computer with a projector to show the videos to families.
 5. If you are sending books home with families, gather the copies.
 6. If parents have sent photos from the take-home activity, organize them in one place so you can show them at the beginning of the session.

Greet & Share (10 minutes)

1. Greet families and welcome them back for another session. Then say:
 - *Raise your hand if you were able to do the Build a House activity at home.*
 - *Let's start by sharing photos and experiences you had with the activity at home.*
 - *Did you have any problems creating your house?*
 - *How did you **test** it?*
 - *What did you do to **improve** it?*



Share families' photos and experiences of the *Build a House* activity.

Watch the Story (10 minutes)



1. Introduce the video. Tell families:
 - Let's watch another story video about the monkeys and their friends, the crab kids. This video is also about **creating, testing,** and **improving**. This time they're playing a sport called Whack-It Ball and need to figure out how to play as a team.
2. Show the video: *Making a Racket Playing Whack-It!*
3. Ask children:
 - Why do you think the crab kids are so good at playing Whack-It Ball? (The crab kids work together, follow the same plan, and don't bump into each other.)
 - What did the monkeys learn from them? (They learned to divide up the court and play as a team.)
4. Explain:
 - The monkeys **created** a plan for how to play together as a team. Then they **tested** it out. When their first plan didn't work, they **improved** it.
5. Tell families:
 - Let's do an activity using the same three steps: **create, test, improve!** In this activity, you'll **create** a mobile and **test** it to make sure it's balanced. Then you'll make changes to **improve** it.

Do the Activity (20 minutes)

1. Distribute the handout, *Make a Mobile*, and have families go to the second page. Families should follow the directions to **create, test,** and **improve** their mobile.
2. Circulate and ask questions that encourage children to explain their design or make **improvements**, such as:
 - Tell me how you **created** your mobile.
 - How can you **test** it to see if everything hangs evenly?
 - Can you think of ways to **improve** your mobile so it balances?
3. When families are done building their mobiles, discuss the activity as a group. Ask children:
 - What did you notice when you **tested** your mobile?
 - What changes did you make to **improve** it?
 - Did you **test** your mobile a second time? What happened?

Watch the Music Video

(5 minutes)

1. Tell families:

- The AHA! Island monkeys use the same three steps that we used to build our mobile. Let's watch a video that shows how they **create**, **test**, and **improve** a musical instrument!



2. Show the video: *Make It Better*

Read a Book (10 minutes)

1. Invite children to gather around for a story. Read *Just a Little Bit*. Say:

- Now we're going to read a book about some animal friends who are playing on a seesaw.

2. Ask:

- Why do you think Mouse couldn't make the seesaw go down?
- It took a lot of animals to make the seesaw go down. How did they do it?



Wrap-Up (5 minutes)

1. Review the session. Tell families:

- Today we practiced creating mobiles, **testing** them out, and **improving** them. You can use the same three steps to **create** almost anything!
- Before our next session, I'd like you to keep practicing the three steps by doing one or two other activities at home. Remember to bring pictures or send them to me ahead of time, if you'd like to share.

2. Distribute the *Create an Obstacle Course* and *Design a Pillow* handouts.

- Encourage parents to do one or both of these activities at home.
- Remind them that each activity has two videos they can watch.
- Explain that they may have already seen some of the videos, but children notice different things each time and can always learn something new.

3. If your program is supplying books to accompany the take-home activities, distribute *We're Going on a Bear Hunt* by Michael Rosen and *The Perfect Pillow* by Eric Pinder. Explain that when families do the activities, they can also read these books to their children.



For the Next Session

Tell parents that they'll need to bring a jacket (or a button-up shirt) to the next session. It will be used in the activity.

Step It Out!**Teach the Robot**

Children and their parents or caregivers learn a new CT skill called **step it out!** When you **step it out it** means you think about the steps needed to do a task and then do them in order. In this activity, they practice **stepping it out** by teaching a “robot” how to put on a jacket.

**What You Need for the Session****Each family will need:**

- An adult-sized jacket or a button-down shirt (Ask parents to bring one of these to the session.)
- Scissors
- Robot mask (If possible, print mask on colored construction paper.)
- String or pipe cleaners to attach the mask (Consider assembling the masks before the session.)
- *Teach the Robot* handout

**You'll need:**

- An Internet-enabled computer with a projector or monitor to view the following videos with families:
 - *Playing Around with a Robot*
 - *To Win the Prize, Be Wise*
- Read-aloud book, *Pete the Cat: Robo-Pete* by James Dean

What to Send Home

Each family will need:

- *Mixed-Up Dress Up* handout
- *Parent Overview: Step It Out!* handout
- If your program is also supplying books to accompany the take-home activities, provide *Ella Sarah Gets Dressed* by Margaret Chodos-Irvine.

What to Prepare Ahead of Time

1. Do the activity on your own before leading it with families.
2. Gather materials and place them in a location where families can easily access them.

3. Go to the AHA! Island website: ahaisland.org

➔ Username: **aha** ➔ Password: **island**

Print and make copies of the following for each family:

- *Teach the Robot* handout
 - *Mixed-Up Dress Up* handout
 - *Parent Overview: Step It Out!* handout
4. Preview these videos on the website: *Playing Around with a Robot* and *To Win the Prize, Be Wise*. Set up a computer with a projector to show the videos to families.
 5. If you are sending a book home with families, gather the copies.
 6. If parents have sent photos of the take-home activities, organize them in one place so you can show them at the beginning of the session.

Greet & Share (10 minutes)

1. Greet families and welcome them back for another session. Then say:
 - *Raise your hand if you were able to do the Create an Obstacle Course or Design a Pillow activities at home.*
 - *Let's start by sharing photos and experiences you had with the activities.*
 - *Did you have any problems **creating** your obstacle course or pillow?*
 - *How did you **test** it?*
 - *What did you do to **improve** it?*



Share families' photos and experiences of the take-home activities.

2. Explain:

- In the last two sessions, we learned how to **create** something, **test** it out, and **improve** it.
- In this session, we're going to learn a new CT skill called **step it out!** When you need to solve a problem or complete a task—like cooking dinner or planning a trip, it can help to think ahead of time about the steps you will need to do and then do the steps in order.

Watch the Video (5 minutes)

1. Introduce the video. Tell families:

- Let's watch a video that shows real kids trying to teach a robot (one of the girls' fathers) how to make a sandwich.



2. Show the video: *Playing Around with a Robot*

3. Tell families:

- Let's do an activity like the one we saw the kids do in the video. You'll teach a robot how to put on a jacket by **stepping it out**. That means you'll have to think about each step to tell the robot and make sure you are saying the steps in the right order. Parents will be the robots; kids will be the teachers.

Do the Activity (20 minutes)

1. Distribute the handout, *Teach the Robot*. Have families go to the third page to cut out and assemble the mask. (If you assembled the masks already, give one to each parent.) Then have them go to page 2 and do the activity.
2. Circulate and ask questions that encourage children to explain their thinking as they **stepped it out**, such as:
 - What are the steps you take to put on a jacket?
 - What should the robot do first? Second?
 - How can you make the steps really clear, so the robot knows what to do?
3. When all the robots are wearing their jackets, discuss the activity as a group. Ask:
 - Was it easy or hard to teach the robot? Why?
 - What problems did you have? How did you solve them?

TIP: Acting like a robot

Encourage the parent robots to follow their child's steps, *exactly as they are told*. When the robot misunderstands a step, the child learns that steps need to be broken down into very small and specific chunks. They'll also learn that it's important to tell the robot the steps in the right order—just like a computer programmer does when programming a real robot! The fun happens when the parent robot follows the child's exact commands and puts the jacket on in unexpected ways!

Watch the Story (10 minutes)

1. Tell families:

- The AHA! Island monkeys do the same thinking and planning that we did to teach our robot. Let's watch a video that shows how they **step it out** when they try to win a prize at the fair!



2. Show the video: *To Win the Prize, Be Wise*

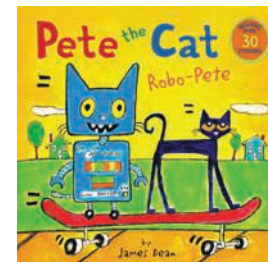
3. Ask children:

- What happened the first two times the monkeys tried to win the elephant? (They didn't win the elephant because they couldn't finish all 3 games without falling off.)
- What did Mr. Many Hats mean when he said, "sometimes order matters"? How did that hint help the monkeys? (He meant that the order was important. The monkeys put the games in order so they could win Ellie.)

Read a Book (10 minutes)

1. Invite children to gather around for a story. Read *Pete the Cat: Robo-Pete*. Say:

- Now we're going to read a book about Pete the Cat. In this story, Pete builds a robot that does everything he tells it to do.



2. Ask:

- Why does Pete the Cat decide to build a robot?
- Why isn't Robo-Pete as much fun as Pete's real friends?
- If you had a robot, what games would you teach it to play?

Wrap-Up (5 minutes)

1. Review the session. Tell families:

- Today we practiced **stepping it out** to teach a robot to put on a jacket. But you can use **step it out** to solve lots of problems!
- Before our next session, I'd like you to keep practicing **step it out** by doing another activity at home. Remember to bring pictures or send them to me ahead of time, if you'd like to share.

2. Distribute the *Parent Overview: Step It Out!* handout and the *Mixed-Up Dress Up* handout.

- Explain to parents that in this activity they will play a game about getting dressed in a mixed-up way.
- Remind parents that they can go to the website to watch the videos when they do the activity at home.

3. If your program is supplying books to accompany the take-home activity, distribute *Ella Sarah Gets Dressed* by Margaret Chodos-Irvine.

Step It Out!

Make a Story

Children and their parents or caregivers continue to practice **step it out!** That means thinking about the steps they need to do to complete a task and then doing the steps in order. In this activity, they practice **stepping it out** by making a story about the monkeys.



What You Need for the Session

Each family will need:

- Scissors
- Story cards (printed and cut)
- *Make a Story* handout

You'll need:

- An Internet-enabled computer with a projector or monitor to view the following videos with families:
 - *At the Drop of a Hat*
 - *Good Time*
- Read-aloud book, *The Backwards Birthday Party* by Tom Chapin and John Forster



What to Send Home

Each family will need:

- *Snack Stacks* handout
- *Find Me!* handout
- If your program is also supplying books to accompany take-home activities, provide *Baking with Dad* by Aurora Cacciapuoti and *Henry's Map* by David Elliot.

What to Prepare Ahead of Time

1. Do the activity on your own before leading it with families.
2. Gather materials and place them in a location where families can easily access them.
3. Go to the AHA! Island website: ahaisland.org
➔ Username: aha ➔ Password: island

Print and make copies of the following for each family:

- *Make a Story* handout
 - *Snack Stacks* handout
 - *Find Me!* handout
4. Preview these videos on the website: *At the Drop of a Hat* and *Good Time*. Set up a computer with a projector to show the videos to families.
 5. If you are sending a book home with families, gather the copies.
 6. If parents have sent photos of the take-home activity, organize them in one place so you can show them at the beginning of the session.

Greet & Share (10 minutes)

1. Greet families and welcome them back for another session. Then say:
 - *Raise your hand if you were able to do the Mixed-Up Dress Up activity at home.*
 - *Let's start by sharing photos and experiences you had with the activity.*
 - *What happened when you used cards to tell you how to put on the clothes?*
 - *Then you **stepped it out**. Did you have any problems deciding how to put the clothes on in order?*



Share families' photos and experiences of the *Mixed-Up Dress Up* activity.

Watch the Story (5 minutes)

1. Introduce the video. Tell families:

- *Let's watch another video about the monkeys and their friends. In this video, they need to **step it out** to find a missing hat.*

2. Show the video: *At the Drop of a Hat*

3. Ask children:

- *What did the monkeys mean when they said they wanted to put Granny Mama's pictures "in order"? (They wanted to figure out what they did first, second, third, and fourth.)*
- *How did that help them find the hat? (The pictures showed that Bo was wearing the hat in the bouncy jungle but not in the pool. So they looked for the hat in the bouncy jungle.)*

4. Tell families:

- *Let's do an activity. You're going to use story cards to put together a story. You'll need to **step it out** to figure out how to put the story cards in order, just like the monkeys did to find the missing hat!*



Do the Activity (20 minutes)

1. Distribute the handout, *Make a Story*. Have families cut out the story cards on pages 3–4. Then have them follow the directions on page 2 to do the activity.
2. Circulate and ask questions that encourage children to explain their thinking, such as:
 - *What is happening in this picture?*
 - *What do you think happens first in the story? What comes next? How do you know?*
 - *How can you put the pictures in order, so they tell a story?*
3. When the families have completed their stories, discuss the activity as a group. Ask:
 - *Was it easy or hard to put the pictures in order? Why?*
 - *What problems did you have? How did you solve them?*
 - *Who would like to share their story?*

TIP: Ask More Questions

If children need more help as you circulate, ask them:

- *How many lemons are on the table in this picture? How many are in this one? What happened to the other lemons?*
- *Why is the pitcher empty in this picture? Why is it full in this one?*

When you ask questions that help children solve problems, you are modeling this important

Watch the Music Video

(10 minutes)

1. Tell families:

- *Solving problems can be hard—sometimes you just want to give up! Let's watch a music video that shows how the monkeys work together to get a hard job done!*

2. Show the video: *Good Time*



Read a Book (10 minutes)

1. Invite children to gather around for a story. Read *The Backwards Birthday Party* by Tom Chapin. Say:

- *Now we're going to read a book about a very different kind of birthday party—one that's out of order!*

2. Ask:

- *What is different about how this story is told?*
- *What things were the opposite of what you'd expect at a birthday party?*



Wrap-Up (5 minutes)

1. Review the session. Tell families:

- *Today we practiced **stepping it out** to make a story about the monkeys. But you can use **step it out** to solve lots of problems!*
- *Before our next session, I'd like you to keep practicing **step it out** by doing one or two more activities at home. Remember to bring pictures or send them to me ahead of time if you'd like to share.*

2. Distribute the *Snack Stacks* and *Find Me!* handouts.

- Explain to parents that in the *Snack Stacks* activity, they will help their child follow a simple recipe. In the *Find Me!* activity, they'll set up arrows that lead to a hidden stuffed animal, doll, or toy.
- Remind parents that they can go to the website to watch the videos when they do the activities at home.

3. If your program is supplying books to accompany the take-home activities, distribute *Baking with Dad* by Aurora Cacciapuoti and *Henry's Map* by David Elliot. Remind families to read the book to their children when they do the activities.

Make It Work!

Create a Colorful Caterpillar

Children and their parents or caregivers learn a new CT skill called **make it work!** When something is not working the way you want it to, you can **check your steps** and **make it work!** In this activity, they make a caterpillar with a colorful pattern.



What You Need for the Session

Each family will need:

- Modeling dough or clay (2-3 different colors)
- Paper or paper plates
- *Create a Colorful Caterpillar* handout

You'll need:

- An Internet-enabled computer with a projector or monitor to view the following videos with families:
 - *Going Bananas with Lemonade*
 - *Playing Around with Paint*
- Read-aloud book, *Teddy Bear Patterns* by Barbara Barbieri McGrath



What to Send Home

Each family will need:

- *Make Sound Shakers* handout
- *Parent Overview: Make It Work!* handout
- If your program is also supplying books to accompany the take-home activities, provide *Rock 'n' Roll Soul* by Susan Verde.

What to Prepare Ahead of Time

1. Do the activity on your own before leading it with families.
2. Gather materials and place them in a location where families can easily access them.

3. Go to the AHA! Island website: ahaisland.org

➔ Username: **aha** ➔ Password: **island**

Print and make copies of the following for each family:

- *Create a Colorful Caterpillar* handout
 - *Make Sound Shakers* handout
 - *Parent Overview: Make It Work!* handout
4. Preview these videos on the website: *Going Bananas with Lemonade* and *Playing Around with Paint*. Set up a computer with a projector to show the videos to families.
 5. If you are sending a book home with families, gather the copies.
 6. If parents have sent photos of the take-home activity, organize them in one place so you can show them at the beginning of the session.

Greet & Share (10 minutes)

1. Greet families and welcome them back for another session. Then say:
 - *Raise your hand if you were able to do the Snack Stacks or the Find Me! activities at home.*
 - *Let's start by sharing photos and experiences you had with the activity at home*
 - *What happened when you stacked your snacks or used the arrows to **step it out**?*
2. Explain:
 - *In the last two sessions, we learned how to **step it out!** We thought about the steps needed to solve a problem and then did them in order.*
 - *In this session, we're going to learn a new CT skill called **make it work!** When something is not working the way you want it to, you can **check your steps** to find the problem and then **make it work** by coming up with a way to fix it.*



Share families' photos and experiences of the take-home activities.

Watch the Story (5 minutes)

1. Introduce the video. Tell families:

- *Let's watch a video about the monkeys and their friends. In this video, the monkeys make lemonade.*

2. Show the video: *Going Bananas with Lemonade*



3. Ask children:

- *How did the monkeys' lemonade turn out the first time they tried it? How did they know? (It was sour. Mrs. Flamingo did not look happy when she tried it.)*
- *What did they do to **make it work**? (They **checked their steps** to figure out what the problem was. Then they added sugar to make it taste better.)*

4. Tell families:

- *Let's do an activity. You'll have a chance to make a caterpillar with a colorful pattern. Then you'll **check your steps** to make sure the pattern is correct, just like the monkeys **checked their steps** after making lemonade. If there are any mistakes, you'll **make it work!***

Do the Activity (20 minutes)

1. Distribute the handout, *Create a Colorful Caterpillar*. Have families go to the second page and follow the directions to do the activity.

2. Circulate and ask questions that encourage children to explain their thinking, such as:

- *Can you tell me about your pattern?*
- *What colors are you using in your pattern? What is their order?*
- *What color goes next? How do you know?*

3. When everyone is done making their caterpillars, discuss the activity as a group. Ask:

- *Who would like to share their caterpillar pattern?*
- *Did anyone find a mistake in their pattern? How did you find the mistake? How did you fix it?*
- *Did anyone play the game where your parent made a mistake in your caterpillar? How did you **check your steps** and **make it work**?*

TIP: It's okay to make mistakes

With **Make It Work!** activities, parents have a tendency to point out their children's mistakes as soon as they make them. But it's better for children to discover their own mistakes! The goal of the **Make It Work!** activities is to help children learn to correct themselves. Tell parents that it's good CT practice to let children **check their steps** to see if they can find a problem. Then they can figure out how to **make it work!**

Watch the Video (5 minutes)

1. Tell families:

- *Let's watch a video about two friends who want to paint their playhouse so it matches their real house. But to get the color right, they'll need to **check their steps** and **make it work!***

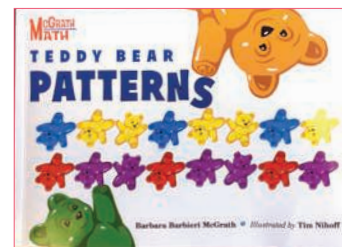


2. Show the video: *Playing Around with Paint*

Read a Book (10 minutes)

1. Invite children to gather around for a story. Read *Teddy Bear Patterns* by Barbara Barbieri McGrath. Say:

- *Now we're going to read a book called *Teddy Bear Patterns*. This book is about colored teddy bears and different patterns you can make with them.*



2. Ask:

- *Let's look at the color pattern on the cover and say the pattern out loud: blue, yellow, yellow; blue, yellow, yellow; blue, yellow . . . What color should come next?*
- *If you made a teddy bear pattern, how many colors would you use? What pattern would you make?*

Wrap-Up (5 minutes)

1. Review the session. Tell families:

- *Today we made caterpillars with colorful patterns. We **checked our steps** and when we found mistakes in our patterns, we **made it work!** You can use the same steps to solve many different kinds of problems!*
- *Before our next session, I'd like you to keep practicing by doing another activity at home. Remember to bring pictures or send them to me ahead of time if you'd like to share.*

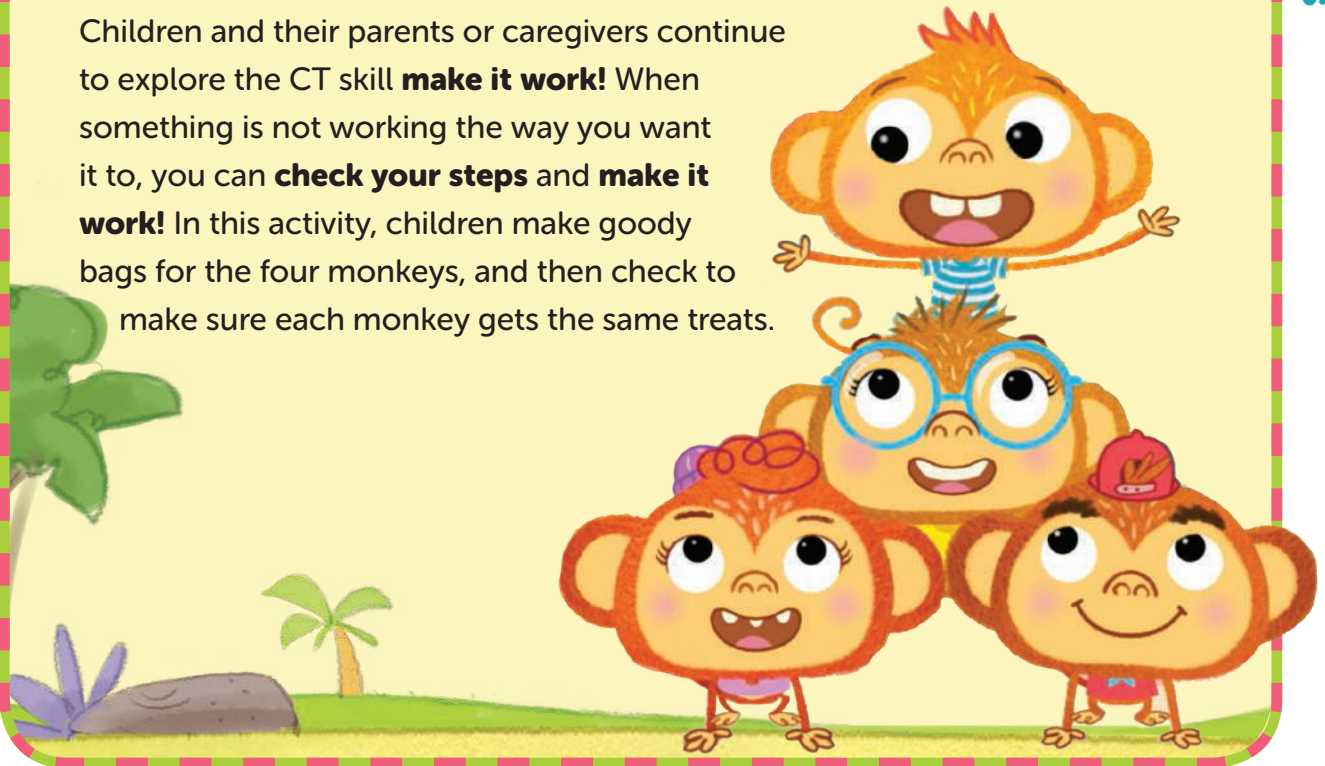
2. Distribute the *Parent Overview: Make It Work!* handout and *Make Sound Shakers* handout.

- Explain to parents that in this activity they will make sound shakers that are loud and noisy when shaken.
- Remind parents that they can go to the website to watch the videos when they do the activity at home.

3. If your program is supplying books to accompany the activity, distribute *Rock 'n' Roll Soul* by Susan Verde.

Make It Work!**Make Goody Bags**

Children and their parents or caregivers continue to explore the CT skill **make it work!** When something is not working the way you want it to, you can **check your steps** and **make it work!** In this activity, children make goody bags for the four monkeys, and then check to make sure each monkey gets the same treats.

**What You Need for the Session****Each family will need:**

- 4 clear plastic bags
- Scissors
- Goody bag cards (printed and cut)
- *Make Goody Bags* handout

**You'll need:**

- An Internet-enabled computer with a projector or monitor to view the following videos with families:
 - Stay Clean, Monkeys!*
 - Stomp, Clap, Spin*
- Read-aloud book, *The Cookie Fiasco* by Dan Santat

What to Send Home

Each family will need:

- *Take Me to the Fair* handout
- *Set the Table* handout
- If your program is also supplying books, provide *Going Places* by Peter and Paul Reynolds and *The Little Kids' Table* by Mary Ann McCabe Riehle.

What to Prepare Ahead of Time

1. Do the activity on your own before leading it with families.
2. Gather materials and place them in a location where families can easily access them.

3. Go to the AHA! Island website: ahaisland.org

➔ Username: **aha** ➔ Password: **island**

Print and make copies of the following for each family:

- *Make Goody Bags* handout
 - *Take Me to the Fair* handout
 - *Set the Table* handout
4. Preview the videos on the website: *Stay Clean, Monkeys!* and *Stomp, Clap, Spin*. Set up a computer with a projector to show the videos to families.
 5. If you are sending books home with families, gather the copies.
 6. If parents have sent photos of the take-home activity, organize them in one place.
 7. Since this is the last session, consider creating a slideshow that includes photos from the different take-home activities. Another option would be to print out the photos and create a photo wall.
 8. Consider bringing in refreshments to celebrate the end of the six-session program.

Greet & Share (10 minutes)

1. Greet families and welcome them back for the final session. Then say:
 - *Raise your hand if you were able to do the Sound Shakers activity at home.*
 - *Let's start by sharing photos and experiences you had with the activity.*
 - *When you first made your shakers, how did they sound? Were both shakers loud and noisy?*
 - *How did you **check your steps** and **make it work** so both shakers were loud and noisy?*



Share families' photos and experiences of the *Sound Shakers* activity.

Watch the Story (5 minutes)

1. Introduce the video. Tell families:

- *Let's watch another video about the monkeys and their friends. In this video, they keep getting dirty. They need to **check their steps** and **make it work** so they can stay clean.*



2. Show the video: *Stay Clean, Monkeys!*

3. Ask children:

- *What were the monkeys trying to do in the video? (The monkeys were trying to stay clean for the party.)*
- *Why couldn't they stay clean? (They weren't in a clean place.)*
- *What did they have to do to make sure they stayed clean for the party? (First, they stayed in a clean place. Then they played cards, which were clean.)*

4. Tell families:

- *Let's do an activity. You are going to make four goody bags that have the same treats inside, one bag for each of the monkeys. Then you'll **check your steps** to figure out if anything is missing or there's too much of something in the bags. If you find a problem, you'll **make it work**, just like the monkeys did to stay clean.*

Do the Activity (20 minutes)

1. Distribute the handout, *Make Goody Bags*. Have families cut out the treat cards on pages 3–4. Then have them follow the directions on page 2 to do the activity.

2. Circulate and ask questions that encourage children to explain their thinking, such as:

- *What treats are you putting in the goody bags?*
- *How are you making sure each monkey gets the same treats?*
- *Why do you think it's important to give all four the monkeys the same treats?*

3. When the families have completed their goody bags, discuss the activity as a group. Ask children:

- *Who can explain how they **checked their steps**?*
- *Did anyone find a mistake in their goody bags? How did you **make it work**?*
- *Raise your hand if you played the game, and if your parent made mistakes in your goody bags. What mistakes did you find and how did you fix them?*

TIP: Many ways to check

Encourage parents to let their child come up with her own ways to **check her steps**. She may want to count the treats in each goody bag to see if there are the same number. Or she may want to look at one treat at a time and make sure it's in each bag. There isn't a right or wrong way to **check steps!** Encourage families to use different strategies!

Watch the Music Video

(10 minutes)

1. Tell families:

- When we made our goody bags, we **checked our steps** and **made it work**. But you can use the same steps to fix just about anything—even dance steps!
- Let's watch a video that shows how the monkeys **check their steps** and **make it work** to learn a new dance.



2. Show the video: *Stomp, Clap, Spin*

Read a Book (10 minutes)

1. Invite children to gather around for a story. Read *The Cookie Fiasco* by Dan Santat. Say:

- Now we're going to read a book about four friends who want to share a plate of cookies.

2. Ask:

- What was the problem at cookie time? Why was it hard to divide 3 cookies among 4 friends?
- How many pieces of cookie does each friend get in the end?
- Is it hard to share things with friends? Why do you think so?



Wrap-Up (5 minutes)

1. Review the session. Tell families:

- Today we made goody bags for the monkeys. We **checked our steps** and **made it work** when some of the bags didn't have the same treats as the others. But you can use the same steps to solve many different kinds of problems!
- This is our last session, but I'd like you to keep practicing **make it work** by doing other activities at home.

2. Distribute the *Take Me to the Fair* and *Set the Table* handouts. Explain to parents that they will build a ramp for a toy car and set the table for a family meal.

3. If your program is supplying books, distribute *Going Places* by Peter and Paul Reynolds and *The Little Kids' Table* by Mary Ann McCabe Riehle.

4. Thank families for attending the sessions. Celebrate by serving refreshments and showing the slideshow or photo wall (see *What to Prepare Ahead of Time*).

Materials List

Session 1 Design a Bridge

- Toy car(s) or wagon(s)
- Container, such as a tub or box (about 14"–18" wide) (The bridges will be built across the container.)
- Household items to make the bridges, such as rulers, paint sticks, construction paper, or cardboard (The items should be shorter than the containers.)
- If you're using waterproof tubs, consider providing water—it's fun for children to build their bridge over real water; however, be prepared for spills and extra clean-up.
- Tape, string, scissors

Session 2 Make an About Me Mobile

- Clothes hanger
- String
- Toys, photos, drawings, or other small objects (Consider asking parents to bring some of these items from home.)
- Optional: tape

Session 3 Teach the Robot

- An adult-sized jacket or button-down shirt (Ask parents to bring these to the session.)
- Scissors
- Robot mask (included in *Teach the Robot* handout) Print mask on colored construction paper, if possible.
- String or pipe cleaners to attach the mask

Session 4 Make a Story

- Scissors
- Story cards (included in *Make a Story* handout)

Session 5 Create a Colorful Caterpillar

- Modeling dough or clay (2-3 different colors)
- Paper or paper plates

Session 6 Make Goody Bags

- 4 clear plastic bags
- Scissors
- Goody bag cards (included in *Make Goody Bags* handout)

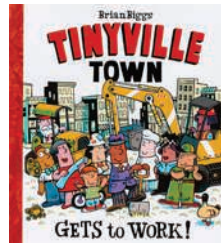
Book List

Book to Read in the Session

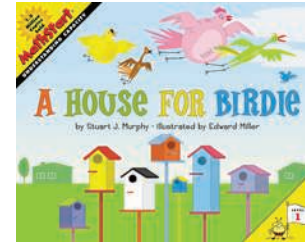
Book(s) to Send Home

Session 1 Design a Bridge

Tinyville Town Gets to Work!
by Brian Biggs



A House for Birdie
by Stuart J. Murphy



Session 2 Make a Mobile

Just a Little Bit
by Ann Tompert



We're Going on a Bear Hunt
by Michael Rosen

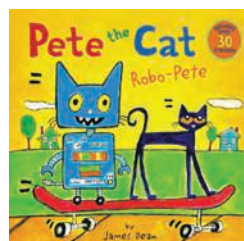


The Perfect Pillow
by Eric Pinder



Session 3 Teach the Robot

Pete the Cat: Robo-Pete
by James Dean



Ella Sarah Gets Dressed
by Margaret Chodos-Irvine



Session 4
Make a Story

The Backwards Birthday Party
by Tom Chapin



Baking with Dad
by Aurora Cacciapuoti

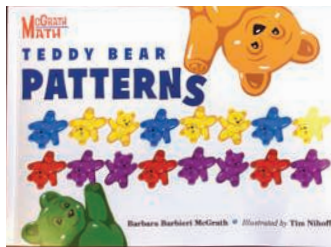


Henry's Map
by David Elliot



Session 5
Create a Colorful
Caterpillar

Teddy Bear Patterns
by Barbara Barbieri McGrath



Rock 'n' Roll Soul
by Susan Verde



Session 6
Make Goody Bags

The Cookie Fiasco
by Dan Santat



Going Places
by Peter and Paul Reynolds



The Little Kids' Table
by Mary Ann McCabe Riehle



Standards Alignment

Head Start Early Learning Outcomes Framework

The Head Start Early Learning Outcomes Framework (ELOF) includes broad areas of early learning for infants, toddlers, and preschoolers through age five. It describes what young children should be able to do in each of the five domains, based on comprehensive research in early education.

<https://eclkc.ohs.acf.hhs.gov/school-readiness/article/head-start-early-learning-outcomes-framework>

AHA! Island aligns to ELOF's five central developmental domains:

Approaches to Learning

Cognitive Self-Regulation (Executive Functioning)

P-ATL 7. Child persists in tasks.

P-ATL 8. Child holds information in mind and manipulates it to perform tasks.

Initiative and Curiosity

P-ATL 10. Child demonstrates initiative and independence.

P-ATL 11. Child shows interest in and curiosity about the world around them.

Creativity

P-ATL 12. Child expresses creativity in thinking and communication.

P-ATL 13. Child uses imagination in play and interactions with others.

Social and Emotional Development

Relationships with Adults

P-SE 1. Child engages in and maintains positive relationships and interactions with adults.

P-SE 2. Child engages in prosocial and cooperative behavior with adults.

Language and Literacy

Attending and Understanding

P-LC 1. Child attends to communication and language from others.

Communication and Speaking

P-LC 4. Child understands, follows, and uses appropriate social and conversational rules.

Print and Alphabet Knowledge

P-LIT 2. Child demonstrates an understanding of how print is used (functions of print) and the rules that govern how print works (conventions of print).

Comprehension and Text Structure

P-LIT 4. Child demonstrates an understanding of narrative structure through storytelling and retelling.

P-LIT 5. Child asks and answers questions about a book that was read aloud.

Cognition

Counting and Cardinality

P-MATH 1. Child knows number names and the count sequence.

P-MATH 2. Child recognizes the number of objects in a small set.

P-MATH 3. Child understands the relationship between numbers and quantities.

Operations and Algebraic Thinking

P-MATH 7. Child understands simple patterns.

Geometry and Spatial Sense

P-MATH 9. Child identifies, describes, compares, and composes shapes.

P-MATH 10. Child explores the positions of objects in space.

Scientific Inquiry

P-SCI 1. Child observes and describes observable phenomena (e.g., objects, materials, organisms, and events).

Reasoning and Problem-Solving

P-SCI 5. Child plans and conducts investigations and experiments.

P-SCI 6. Child analyzes results, draws conclusions, and communicates results.

Perceptual, Motor, and Physical Development

Gross Motor

P-PMP 1. Child demonstrates control, strength, and coordination of large muscles.

P-PMP 2. Child uses perceptual information to guide motions and interactions with objects and other people.

Fine Motor

P-PMP 3. Child demonstrates increasing control, strength, and coordination of small muscles.

K12 Computer Science Framework

The K12 Computer Science Framework was created by several organizations, in collaboration with school districts, to develop guidelines for computer science education in kindergarten through twelfth grade. The goal of the framework is to “inform the development of standards and curriculum, build capacity for teaching computer science, and implement computer science pathways.”

<https://k12cs.org>

AHA! Island aligns to several of the K12 Computer Science Framework’s Core Practices:

Core Practices

Practice 3. Recognizing and Defining Computational Problems

P3.2 Decompose complex real-world problems into manageable sub-problems that could integrate existing solutions or procedures.

Practice 4. Developing and Using Abstractions

P4.1 Extract common features from a set of interrelated processes or complex phenomena.

P4.4 Model phenomena and processes and simulate systems to understand and evaluate potential outcomes.

Practice 5. Creating Computational Artifacts

P5.1 Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations.

P5.2. Create a computational artifact for practical intent, personal expression, or to address a societal issue.

P5.3. Modify an existing artifact to improve or customize it.

Practice 6. Testing and Refining Computational Artifacts

P6.1. Systematically test computational artifacts by considering all scenarios and using test cases.

P6.2. Identify and fix errors using a systematic process.

P6.3. Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

Practice 7. Communicating About Computing

P7.2. Describe, justify, and document computational processes and solutions using appropriate terminology consistent with the intended audience and purpose.

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