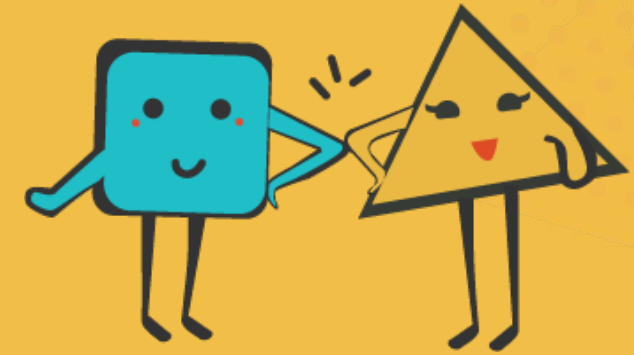
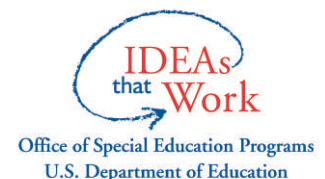


# Promoting STEM at Home for Young Children with Disabilities



Produced by: Chih-Ing Lim, Megan Vinh, Christine Harradine, Hsiu-Wen Yang, and Jessica Amsbary

Students with Additional Needs in Remote Learning Environments: An Unconference  
May 20, 2020



# Who Are We?

## **FPG, UNC-CH**

Megan Vinh (Co-PI)  
Chih-Ing Lim (Co-PI)  
Jessica Amsbary  
Julie Chin  
Christine Harradine  
Adam Holland  
Lindsay Holland  
Wendy Morgan  
Kellen Reid  
Ann Sam  
Tracey West  
Hsiu-Wen Yang

## **Marsico Institute, University of Denver**

Doug Clements  
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Shannon Stark Guss

## **Public Health Management**

Pip Campbell

## **School of Education, UNC-CH**

Janice Anderson

## **Consultants**

Christine Cunningham  
Charlene Czerniak  
Lisa Wadors

## **OSEP Project Officer**

Tracie Dickson



# Center Outcome

Young children with disabilities participate and benefit from high quality STEM teaching and learning.



## What We Know



Children with or without disabilities can develop the foundations for STEM learning right from infancy.



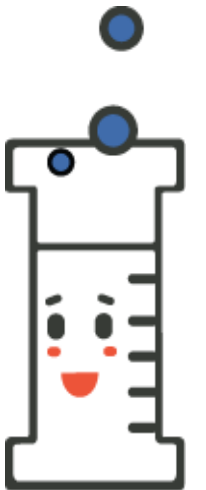
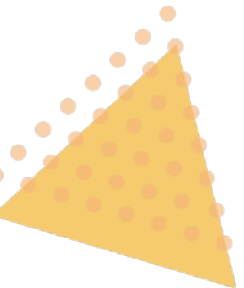
Engaging in early STEM learning activities raises later reading, writing, literacy, and math scores.

# STEM Opportunities Can Be Incorporated into Everyday Routines and Activities



# Dish Washing

Source Credit: Recommended Practice Module



# Resources to Support You

1. Storybook conversation series
2. Supporting STEM learning in daily routines
3. Telepracitce in STEM learning





# Storybook Conversations Series

- Curated STEMIE book lists
- Storybook Reading bookmarks
  - On-line book availability
  - Video links to adults reading the books
  - Bookmarks with suggested prompts
- Suggestions for adaptations to the reading process



# Curated STEMIE Book List - Science

## Recommended SCIENCE Books



These award-winning books embrace every day science ideas accurately and have lots of engaging illustrations and photos to talk about with your young children. You may want to explore other books by the authors listed here – their other titles are often just as good!

The ages are only SUGGESTED guidelines! For example, many books in the “babies and toddlers” category may be loved by older children. If you need to adapt the reading process to match the needs of your child, please see STEMIE’s adaptations resource [here](#).

Click on the images of the book covers to visit videos of an adult reading aloud each book. Check your local library for digital book lending or this [free online](#) digital library. You could also mute the audio from the read-aloud video if you prefer to read the book to your child yourself and do not have a copy.

### Babies and Toddlers



**The Snowy Day**  
by Ezra Jack Keats



**Mr. Brown Can Moo! Can You? Dr. Seuss's Book of Wonderful Noises**  
by Dr. Seuss



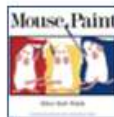
**Hello World! Solar System**  
by Jill McDonald



**Moo Baa La La La**  
by Sandra Boynton



**Baby Loves Quarks**  
by Ruth Spiro



**Mouse Paint**  
by Ellen Stall Walsh

### Ages 2 to 4 years



**The Grouchy Ladybug**  
by Eric Carle



**Happy**  
By Mies Van Hout

### Ages 3 to 5 years



**Pantone Colors**  
by Pantone



**Feathers and Hair: What Animals Wear**  
by Jennifer Ward

### Ages 4+ years



**Lovely Beasts: The Surprising Truth**  
by Kate Gardner



**O Say Can You Seed**  
by Bonnie Worth



**I Face the Wind**  
by Vicki Cobb



**Oscar and the Moth**  
by Geoff Waring



**Going Places**  
by Peter & Paul Reynolds



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# Curated STEMIE Book List - Engineering

## Recommended

## ENGINEERING Books



These award-winning books embrace every day engineering ideas accurately and have lots of engaging illustrations and photos to talk about with your young children. You may want to explore other books by the authors listed here – their other titles are often just as good!

The ages are only SUGGESTED guidelines! For example, many books in the “babies and toddlers” category may be loved by older children. If you need to adapt the reading process to match the needs of your child, please see STEMIE’s adaptations resource [here](#).

Click on the images of the book covers to visit videos of an adult reading aloud each book. Check your local library for digital book lending or this [free online digital library](#). You could also mute the audio from the read-aloud video if you prefer to read the book to your child yourself and do not have a copy.

### Babies and Toddlers



**Alaska 1-2-3**  
by Shannon Cartwright

### Ages 2 to 4 years



**Not a Box**  
by Antoinette Portis



**The Klutz Book of Inventions**  
by John Cassidy

### Ages 3+ years



**The most magnificent thing**  
by Ashley Spires



**Beautiful Oops!**  
by Barney Sartzberg



**When I Build with blocks**  
by Niki Alling

### Ages 5+ years



**Rosie Revere Engineer**  
by Andrea Beaty



**What Do You Do with an Idea?**  
by Kobi Yamada



**Iggy Peck Architect**  
by Andrea Beaty



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# Curated STEMIE Book List - Math

## Recommended

### MATH Books



These award-winning books embrace every day math ideas accurately and have lots of engaging illustrations and photos to talk about with your young children. You may want to explore other books by the authors listed here – their other titles are often just as good!

The ages are only SUGGESTED guidelines! For example, many books in the "babies and toddlers" category may be loved by older children. If you need to adapt the reading process to match the needs of your child, please see STEMIE's adaptations resource [here](#).

Click on the images of the book covers to visit videos of an adult reading aloud each book. Check your local library for digital book lending or this [free online digital library](#). You could also mute the audio from the read-aloud video if you prefer to read the book to your child yourself and do not have a copy.

#### Babies and Toddlers



**Inside, Outside, Upside Down**  
by Stan and Jan Berenstain



**I See Patterns**  
by Linda Benton

#### Ages 2 to 4 years



**Six Dinner Sid**  
by Inga Moore



**Crash! Boom! A Math Tale**  
By Robie Harris



**Bear in a Square**  
by Stella Blackstone

#### Ages 3 to 5 years



**Color Zoo**  
by Lois Ehlert



**How Big is a Foot?**  
by Rolf Myller

#### Ages 4+ years



**Actual Size**  
by Steve Jenkins



**Ten Black Dots**  
by Donald Crews



**Pete the Cat and His Four Groovy Buttons**  
by Eric Litwin



**12 Ways to Get to 11**  
by Eve Merriam



# Storybook Reading Bookmarks - Very Hungry Caterpillar

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**Storybook conversations with your young child**

Are you spending more time at home reading with your young children? Are you interested in helping them gain language skills and learn about STEM?

Use this reading time as an opportunity for building concepts through conversation! Your child can help you tell part of the story. You can use digital books on a screen or with regular paper or board books. This is called: *dialogic reading*<sup>1</sup>. It's easy! And we have some tips to help you do it!

<sup>1</sup> What Works Clearinghouse Intervention: DialogicReading [https://ies.ed.gov/nice/awc/Docs/InterventionReports/WWC\\_Dialogic\\_Reading\\_020807.pdf](https://ies.ed.gov/nice/awc/Docs/InterventionReports/WWC_Dialogic_Reading_020807.pdf)

✓ If you don't have a paper copy of the book, [click here](#) to view a digital version.



**Prompt Examples:**

**Complete a sentence** "This book is called 'The Very Hungry \_\_\_\_\_'."

**Recall** "What happens to the caterpillar at the end of the story?"

**Open-ended** "Tell me what is happening in this picture."

**Wh-questions** "Why do you think the caterpillar needed so much food?"  
"What is the caterpillar going to eat next?"

**Distancing questions** "How would you feel if you ate what the caterpillar ate?"

**STEP ONE**

You and your child select a book. Look for a book that appeals to your child and has lots of detailed pictures to give you things to talk about. Encourage your child to turn the pages or operate the screen. Let's use *The Very Hungry Caterpillar* by Eric Carle as an example.

✓ For tips on picking appropriate books, see [this guide](#).

**STEP TWO**

**PEER: (Prompt- Evaluate-Expand-Repeat)**

**P:** Prompt your child with questions. Use the acronym **CROWD** to remember ways to prompt your child. **Examples on the left.**

**E:** Evaluate your child's answers by responding to what the child said. Praise and encourage  
"Yes, you're right! This book is about a hungry caterpillar."

**E:** Expand your child's answers. Ask another question or help the child remember additional related details.  
"Where did we see a caterpillar yesterday?"

**R:** Repeat. Repeat or revisit the prompt you started with, encouraging your child to use any new information or words you've provided. "Can you say caterpillar?"

✓ **Recall and Distancing** work best with older preschoolers.

To learn more about this approach, check out:

- 1) [Quick read](#)
- 2) Dig deeper with [video demonstrations](#) and guidance documents (CONNECT module 6)
- 3) Guided [video of a parent](#) reading *The Very Hungry Caterpillar* to her toddler and a [short tutorial](#).

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PAGE 2

**STORYBOOK CONVERSATIONS**

**Storybook Conversations**  
Print this page out and cut around the edges.

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**C** Complete a sentence  
"On Wednesday, he ate through 3 plants but \_\_\_\_\_"  
(Wednesday page but relevant prompt through Friday)

**R** Recall  
"The caterpillar started off as an egg, then what happened to him?" (at the end of the story)

**O** Open-ended questions  
"How many pieces of fruit do you think he will eat next?" (pages for Tuesday to Friday)

**W** WH questions  
"What do you think will happen next?"  
(e.g., on the cocoons page)

**D** Distancing questions  
"Was there a time when you ate too much? How did you feel?" (page where caterpillar was sick)  
"What foods do you like to eat?" (end of story)

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**IDEAs that Work**  
Office of Special Education Programs

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# At-Home Adaptations



## SUPPORT CHILDREN WHO ARE LEARNING TO MANIPULATE

### PAGE TURNERS



Use things around your house, such as small pieces of felt, popsicle sticks, empty daily contact lens cups, or big paper clips to place on sides of books.

Learn more:

<https://tinyurl.com/ATsolutions-page-turners>

#### This adaptation can also...

- ✓ Increase Children's Attention and Engagement
- ✓ Support Alternative Ways of Communication
- ✓ Support Children's Learning



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## SUPPORT ALTERNATIVE WAYS OF COMMUNICATION (1/2)

### PICTURES, SYMBOLS, SIGNS, OR ICONS



- Create corresponding picture cards of the characters or objects in book.
- Add signs and icons to the story.

Learn more:

<https://www.techaccess-ri.org/ho-to-making-adapted-books/>

#### This adaptation can also...

- ✓ Increase Children's Attention and Engagement
- ✓ Support Children's Learning
- ✓ Support Children Who Are Deaf/With Hearing Impairment



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# At-Home Adaptations


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**INCREASE CHILDREN'S ATTENTION AND ENGAGEMENT (2/3)**

**VISUAL SUPPORT AND SCHEDULES**

 Pick a book

 Go to comfy chair

 Read together

Use visual support and schedules to create structure and teach expectations during storybook reading.

**This adaptation can also...**

- ✓ Support Alternative Ways of Communication
- ✓ Support Children's Learning

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**SUPPORT CHILDREN WITH VISION IMPAIRMENT/LOW VISION (1/2)**

**STORY BOX**

 Photo credit: Paths to Literacy

Create a story box, which is a collection of items in a box or bag that includes the items mentioned in the story.

Learn more: <https://www.pathstoliteracy.org/storybox-ideas-norma-drissel>

**This adaptation can also...**

- ✓ Increase Children's Attention and Engagement
- ✓ Support Children with Sensory Challenges

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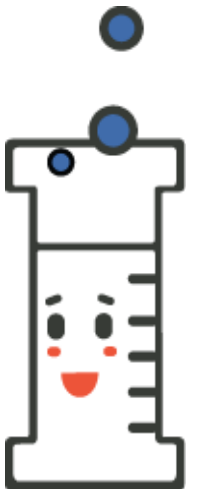
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# Storybook Conversation Example



Credit: Lindauer, C. & Pierce, P. (2010). Get on the Road to Inclusion: Put the CROWD in the CAR. Chapel Hill, NC: National Inclusion Conference.






# Storybook Reading Bookmarks – Six Dinner Sid

Storybook conversations with your young child

## Bookmark with Prompts

Print this page out and cut around the edges.



Ages 2-5

Math

### Six Dinner Sid

By Inga Moore



**C** Complete a sentence  
*"Sid had to go to the doctor not twice but \_\_\_ (Six times)!" (page 18)*

**R** Recall  
*"How many names does Sid have?" (end of story)*

**O** Open-ended questions  
*"How many beds does Sid have? Let's point as we count!" (page with Sid sleeping on different beds)*

**W** WH questions  
*"What did Sid eat two times/twice? (fish)" (page with Sid eating)*

**D** Distancing questions  
*"How many dinners do you eat every day?"*

*Six Dinner Sid* is a book written and illustrated by Inga Moore. Sid the cat lives at number one Aristotle Street. He also lives at number two, number three, number four, number five, and number six.


Since the neighbors on Aristotle street don't talk to each other, no one realizes that Sid gets six dinners each night. What will happen when Sid gets a cold?

- ✓ If you do not have a paper copy of this book, [click here](#) to watch a YouTube video of someone reading the book. If you prefer to read it to your child yourself, just mute the audio.
- ✓ Check your local library to see if it allows you to borrow a digital version of this book to read on a laptop, tablet, or phone. Or find it online [here](#).
- ✓ Take a look at STEMIE's tips for making adaptations to the storybook reading process [here](#).


STORYBOOK CONVERSATIONS

PAGE 2


## Activities to Build on STEM



Have a tea party with a favorite stuffed animal and "prepare" dinners for the stuffed animal. Start with one, then two, then three, etc.



Following a recipe is a great way for children to learn sequencing. Cook something together your child would want to feed Sid if he belonged to your family.



Talk about math! Use [these tips](#) for math talk during everyday activities and routines.

UNC FRANK PORTER GRAHAM CHILD DEVELOPMENT INSTITUTE UNIVERSITY OF DENVER Maricopa Institute IDEAS in the Work Office of Special Education Programs

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# Storybook Reading Bookmarks – Six Dinner Sid

## Adaptation Ideas for Six Dinner Sid



### SUPPORT CHILDREN WITH VISION IMPAIRMENT/LOW VISION

#### STORY BOX



#### Items may include:

A plush cat; six toy houses (Braille or tactile numbers 1-6); six plates or bowls; 1 medicine bottle; six spoons; 1 toy phone

#### This adaptation can also...

- ✓ Increase Children's Attention and Engagement
- ✓ Support Children with Sensory Challenges



### SUPPORT ALTERNATIVE WAYS OF COMMUNICATION

#### PICTURES, SYMBOLS, SIGNS, OR ICONS



- Use corresponding picture cards of the characters or objects in book.
- Add signs and icons to the story.
- Use pictures as part of a communication board

#### This adaptation can also...

- ✓ Increase Children's Attention and Engagement
- ✓ Support Children's Learning
- ✓ Support Children Who Are Deaf/With Hearing Impairment

# Storybook Reading Bookmarks – Six Dinner Sid

STORYBOOK  
CONVERSATION 5

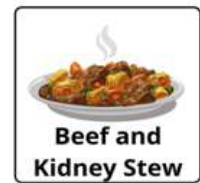
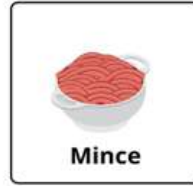
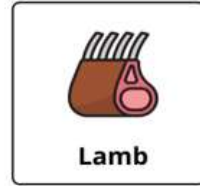
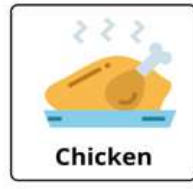
PAGE 5

**STEMIE**  
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## How to:

Step 1: Print and Cut the images

Step 2: Glue or tape the pictures on the pages or use velcro to attach the picture on the pages

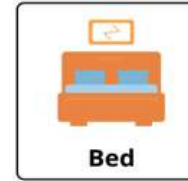


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STORYBOOK  
CONVERSATION 5

PAGE 6



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# Curated List of Resources for Families

## Covid-19 Resources for Families

Helping Children Understand COVID-19

Teaching Children to Wash Hands

**Supporting Children's STEM Learning During Routines And Activities**



## Covid-19 Resources for Families: Supporting Children's STEM Learning During Routines And Activities

The COVID-19 outbreak brings rapid changes to daily schedules. With school closures, families are trying to figure out how to continue supporting children's learning at home. Children thrive on routines and predictability, and learn best from clear expectations and consistent structure. While supporting children's learning at home, we encourage families to begin by fostering a secure and predictable environment for young children as best as they can.

Provided below is a list of resources to help create structure and routines at home and a variety of STEM learning opportunities that can be embedded into daily routines and activities. Included in the list are also some resources that can help families adapt the activities to meet each child's individual needs.

*Update April 4, 2020*

### Create Routines and Structure

- **Support Mealtime and Potty Training**

*Podcasts and tip sheets on specific strategies for mealtime and potty training; English; Tele-SCOPE*

- **Build New Routines**

*Guides and resources on specific strategies to support individuals with autism during uncertain times; English; Autism Focused Intervention Resources & Modules (AFIRM), Frank Porter Graham Child Development Institute*

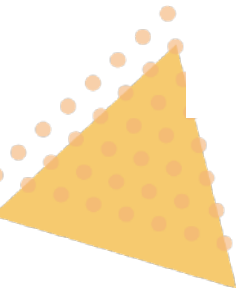
- **Create Structure and Rules for Your Child [Part 1][Part 2]**

*3-minute video on creating simple routines at home with toddlers and preschoolers; English; Centers for Disease Control and Prevention (CDC)*

- **Surviving the COVID-19 Pandemic... with Children**

*Blog post with strategies and links to additional resources including videos for children; English; ABA DESK*

<https://stemie.fpg.unc.edu/covid-19-resources-families-supporting-childrens-stem-learning-during-routines-and-activities>



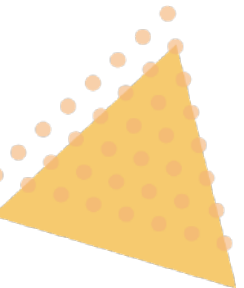
# Coming Soon: STEM Opportunities in Daily Routines

We will include

- Tip Sheets
- Videos



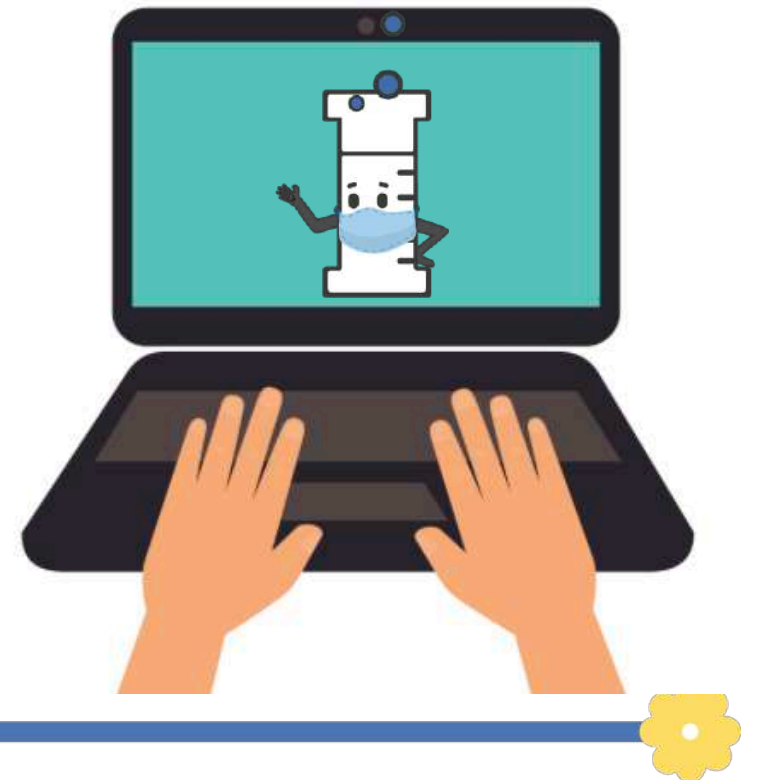
# Coming soon: Home Demonstration



# Coming Soon: Telepractice in STEM Learning

## Topics will include:

- Coaching families to use STEM at home using telehealth and distance learning
- Peer-to-peer connections
- Asynchronous and synchronous supports



# Thank you

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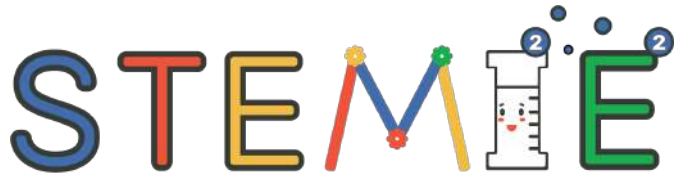


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FOR EARLY LEARNING



Office of Special Education Programs  
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