Introduction Video
Design Thinking in Early Childhood: They Can Do It, Too!

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- Little Rock, Arkansas
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- **EC Discovery Lab** (PK3 - 1st)
- Academic Technology Specialist
- Master’s Elementary Ed
- NBCT - EC-Generalist, 2008
- Google Certified Trainer
- Certificate in Early Education Leadership
Traits of Highly Successful Babies

- Sense of Urgency
- No Fear of Failure
- Resourceful within Given Constraints
- Collaborative
- Perseverance
How Do We Design Challenges to Encourage These Traits?
The Design Thinking Process

- EMPATHIZE
- DEFINE
- IDEATE
- PROTOTYPE
- TEST

Design thinking process, graphic by d.school, Hasso Plattner Institute of Design at Stanford
Design vs. User Experience

USER BEHAVIOR

VISUAL DESIGN
How Do We Design Challenges to Encourage These Traits?

Design Challenges are most appropriate for young children when they have 3 components:

- Low Floor
- High Ceilings
- Wide Walls

Resnick 2005
How Do We Design Challenges to Encourage These Traits?

Design Challenges are most appropriate for young children when they have 3 components:

**Low Floor:**
Lessons with a low floor, or low threshold, offer an easy way to get started.

Resnick 2005
How Do We Design Challenges to Encourage These Traits?

Design Challenges are most appropriate for young children when they have 3 components:

**High Ceilings**

Lessons with a high ceiling offer many ways to expand. Slight adjustments can make them more challenging or complex.

*Resnick 2005*
Design Challenges are most appropriate for young children when they have 3 components:

**Wide Walls:**

Lessons with wide walls offer different pathways to explore and different chances to integrate the curriculum from other learning domains.
Sample Lessons

Lightning
These can be done in one lesson period or less.

Short Term
These can be done in 2 - 4 lesson periods.

Long Term
These require 6 - 9 weeks of time.
Lightning Challenges

**Pipe Cleaner Challenge**
Build a tower as tall as possible using only 15 pipe cleaners.

**Paper Helicopters**
Use the template found here to build a paper helicopter. Modify it by adding folds to the planes, adding paper clips for weight, or launching it in different ways.

**LEGO Marble Maze**
Using loose LEGOs and base plates, build a maze for your marble. Add dead ends, cliffs, ramps, or finish lines. Join yours with a friend to extend the maze.

**Help Bo Keep Her Sheep**
Use materials around the room to build a pin for Bo’s sheep (cotton balls). Each sheep must be able to sit in the pin without touching the fence or another sheep.

**Build Humpty a Better Wall**
Poor Humpty just wants to sit on the wall but he keeps falling off. Can you build a wall with a seat for Humpty (a plastic egg) so he can enjoy the view safely?

**Gumdrop Structure**
Using toothpicks and gumdrops (or marshmallows or any sticky food, build a freestanding structure. This is also great for older kids to build models of 3D shapes to extend their geometry unit.
Short Term Challenges

**Bee Bot Cart**
Bee Bot needs to help move some building materials. Build him a cart and plan his path for delivery. Find the [planning sheet here](#).

**Help Fox Get the Grapes**
After reading *The Fox and The Grapes*, have the kids design and build a way for Fox to get the grapes.

**A Trap for Peter Rabbit**
Help save Peter Rabbit and Mr. McGregor’s garden by designing and building a humane trap for Peter.
Long Term Challenges

A House for the 3 Little Pigs*

Challenge: Use straw-like, stick-like, and brick-like materials to build strong homes that won’t fall down when the wind blows at different speeds.

The Kinderman Challenges

Challenge 1: Design and build a man that can fit in your hand using materials from around the room.

Challenge 2: Design and build a way to safely move your man from the 2nd floor balcony to the 1st floor.

Challenge 3: Design and build a way to help your man safely navigate the river, waterfall, or a lake.

Get a copy of the planning sheet here.

3D Printed Key Chains

Using a computer assisted design program such as Tinkercad, have students design and print 3D printed key chains.

*More info on this lesson and others like it can be found in the book, Making and Tinkering With Stem (Hermoman, 2017)
Building Prerequisite Skills

- Fine Motor Development
- Introduction to Tools
- Observational Drawings
- Cooperative Learning Skills
Fine Motor Development
Introduction to Tools
Observational Drawings
Cooperative Learning Skills
"I never lose. I either win or I learn."

-Nelson Mandela
Questions?

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