Building Critical Foundation Skills with Pre-K in Fun & Hands-on Ways
The curriculums and resource materials mentioned in the following presentation, among many others, are available at www.sparkedinnovations.net. Please feel free to contact us with any questions about resources, programs, and/or implementation.

Jessica Castaneda
Web/Educational Program Consultant
Office: 931-668-4129
Cell: 931-273-4050
sparkedinnovations@gmail.com

Nora Wilson Fry
Curriculum/Educational Program Consultant
Office: 931-668-0249
Cell: 931-808-6289
sparkinginnovations@gmail.com
The following are foundational skills needed by students at every age and grade level.
Curiosity and eagerness to learn-asks to participate in new experiences

- Reasoning and problem solving-flexible, can use various resources for problem solving

- Invention and imagination-pretend play, creative or unusual solutions about how to do something
• Initiative-makes choices and decisions
• Engagement-increased ability to focus attention
• Persistence-increased ability to complete longer tasks, not give up.
All of Spark’s curriculum units have been designed to provide opportunities for instructors and students to foster build on each of these skill areas through activities, projects, materials, exploration, and discussion.
All of our materials are designed to be infinitely adaptable to situation (in-home, after-school, before-school, during school, summer camps, etc.), classroom (single-grade, multi-grade, ELL, etc.), and students of every age, including pre-k.
In fact, we’ve used them in every one of these situations, so if you have questions, we can help!
It’s never too early (or too late) to start using exploration and inquiry to create unforgettable learning experiences for your students!
With the youngest students often the goal is to simply guide them to explore and discover the joy of wonder. At this age it’s perfectly okay for science to be ‘magic’! Don’t worry about covering the deep discussions about the whys and hows and scientific know-how that may be in the curriculum.

General Tips for Adapting Activities

Keep it simple!

With the youngest students often the goal is to simply guide them to explore and discover the joy of wonder. At this age it’s perfectly okay for science to be ‘magic’! Don’t worry about covering the deep discussions about the whys and hows and scientific know-how that may be in the curriculum.
Pre-K students are capable of successfully completing many of the same activities as older students but they may need more help and prep by the instructor, ex. parts and templates may have to be prepared before class.

Provide support & set your students up for success!
A laughing, messy, excited, enthusiastic adult (even if you sometimes feel a little silly) makes a deep and lasting impression on a young student. They will follow your lead!

Play, learn, laugh, and discover alongside your students!
In the following slides we’ll provide a few of the many possible examples from some of our 120+ units that would build on these critical foundational skills for pre-k students.
Initiative

In our EXITO pre-k prep curriculum there are many opportunities for the child to take the initiative. Students love to take the lead during ‘dialogic reading’ and ‘make-believe-alouds’ with picture books!
In this strategy, the child directs and leads a conversation around the pictures of a book; the adult listens to the child talk, uses “what” questions ex. “What is this?” or “What do you see the boy doing?”, and rephrases and extends the child’s utterances, ex. “balloon” can be extended to, “Yes that is a red balloon”, but remains at all times the follower in the dialogue.
Some very unusual things happen when you mix a little milk, food coloring, and a drop of liquid soap. ‘Magic Milk’* or ‘Rainbow Milk’ is a simple science activity with a big “WOW!” factor.

You can even do an extension where you ‘preserve’ your experiment as a gorgeous art project.

*page 32
Image via sayyes.com
Once students get a little taste of ‘experimental’ fun they won’t want it to be done! Luckily we have three entire curriculums chock full of fun, affordable, and easy experiments that allow kids to explore the amazing ‘magic’ of science!

Fun tip! Large adult white t-shirts that are cut up the front make perfect ‘lab coats’ for pre-k scientists!
In our Lepidoptera/Butterfly unit there are several fun activities that teach persistence.

One of our students’ favorites is the Butterfly Camouflage hunt where students pretend they are birds (with straws for beaks) hunting for those tasty hidden butterflies!

Will they find all the camouflaged butterflies and fill their hungry bird bellies before time runs out?
Can You Spy My Butterfly?

Then students get to try their hand at being tricky by coloring their own paper butterfly and hiding it in the room. Can anyone spot it?
Moon in my mouth?

There’s so much in nature and space to explore! Watch your students get Moonstruck while exploring the activities in our fun moon unit where they get a taste of space while charting the phases of the ‘Oreo moon’, try to drink like an astronaut, and learn how craters form by launching asteroids at their own moon!
Curiosity!

Did you know that soap can grow?!
Ivory Soap Science!

The Ivory Soap experiment is probably one of our favorite science activities for kids because it’s so quick and easy, and it yields such fascinating results. There’s almost no prep required, and you don’t need any fancy supplies. All that’s required is a bar of Ivory (and it must be Ivory brand soap for it to grow) and a microwave oven.

It happens so quickly! To see it rolling, writhing and expanding as if it were alive is really exciting! And kids find it fascinating!

Check out this video from Steve Spangler Science to watch Ivory soap in action!
Reasoning & Problem-Solving

We are long-time fans of marble runs and extending our love for rolling balls and ramps into the fun and zany world of Rube Goldberg was a no-brainer.

Students fall in love with inventing and building, testing, and rebuilding their own fun and funny Rube Goldberg style chain reaction machine during the ‘Chain Reaction: Creativity in Motion’ project* from our Robots series! *pages 38-39 & 47-49

Image via TinkerLab
How to do it!

So, are you interested in building a Rube Goldberg-style machine with little kids? Here are a few tips and ideas to make your own (un)complicated machine.
First things first, you’ll want to watch some Rube Goldberg contraptions in action to get inspired. Kids (and adults) love this video from OK Go. It’s incredibly complicated, but oh-so-amazing, so don’t think that you’ll be able to replicate this with little kids, but they’ll LOVE watching it (over and over and over.)
Step 2: Solve a Problem

Next, come up with a simple problem that you’re trying to solve. For example:

• Ring a Bell
• Pop a Balloon
• Open a Door
• Shut a window
• Deliver a cookie
• Put out a candle
• Pour a bowl of cereal

Once you have a problem sorted out (and don’t worry – you can change this later if you want), gather supplies...
Collect a bucket-full of supplies and then lay them out so they’re easily seen. These can largely be found in your home or classroom — start with what you have! You will most likely start with some of these basics, and then forage your home or classroom for more supplies as you go. There’s a great printable list here to get you started!
A few supply ideas!

**THINGS THAT ROLL**
- Marbles
- Balls: Tennis, Baseball, Bowling, etc.
- Toy Cars
- Dominoes
- Skateboard
- Roller Skate
- Mousetrap

**RECYCLABLES**
- Cardboard
- Cereal Boxes
- Cardboard Rolls
- Plastic Water Bottles
- Cans
- Aluminum Foil

**EVERYDAY MATERIALS**
- Chopsticks
- Popsicle Sticks
- Ruler
- Wooden Blocks
- Bowl
- String
- Tape
- Sand
- Pins
- Hammer
- Balloons
- Water
- Fan
- Vinegar and Baking Soda

**THINGS THAT MOVE**
- Mousetrap
- Dominoes
- Toaster
- Fan

**RAMPS**
- Toy Train Tracks
- Marble Runs
- Books
- Trays
- PVC pipe
- Plastic tubing
- Gutters
Once you have the supplies ready, start building. While the OK Go video (and others like it*) include some pretty complex machines and concepts, keep this simple for preschoolers. The basic concept that we’re exploring is that of a chain reaction, so anything that tips something else over (and so one) is what you’re going for. Don’t worry too much about building things like pulleys and levers for young children.

*Like the fun A-Trak & Tommy Trash make a Tuna Melt or ‘the 14 most ridiculous Rube Goldberg machines ever built!’
See the possibilities for yourself!

RUBE GOLDBERG MACHINE FOR LITTLE INVENTORS

Check out this cute video from the TinkerLab to get a sense of what’s possible with pre-k!
Tips!

• Make it backwards, start with the end goal (ex. pouring a bowl of cereal) and work backwards to the beginning.
• Save items from recycling to use in the Rube Goldberg Machine (such as toilet and paper towel paper tubes, paper plates (they can be cut to make tracks!) oatmeal tubs, egg cartons, and more)
• Be inspired! Look at other Rube Goldberg Machines for ideas
• Incorporate young kids where and whenever possible. They may not be able to brainstorm up how to do the whole thing, but if they’re a part of building it, and you incorporate their ideas, they’ll be even more excited with the outcome.
• Expect it to fail, over and over again. Then adjust something and do it again. And still expect it to fail again even if it once was successful!
Invention & Imagination

**Build Your Own Adventure Lego Unit:** Use this curriculum as a jumping off point to gather ideas! Then give your pre-k students fun challenges and join them as they come up with problem solving solutions to building a super tall tower that won’t fall over, a funny new car that they can send far, and so much more!
This zany challenge was a monster hit!

Tip: With some googly eyes and a few silly stickers (ex. Inanimate Office Supply Stickers), you can upgrade your Duplo Legos into a fun monster building set that can be used over and over again!
And bricks were only part of it!

“Fum, foe, fie, fee, Monsters don’t eat broccoli!” Monsters are a favorite subject for any art project! We read Monsters Don’t Eat Broccoli to the students. Then, Lego City skyscrapers made a fantastic backdrop for our hungry monsters.
It’s Movie Magic!

Another awesome experience in persistence, imagination, curiosity, engagement, initiative and more are our Building Stories & ‘Monsters! Ink!’ units!
Monstrous Fun for Everyone!

Pre-K students become dynamic directors, tech wizards, and movie masters using the incredibly easy to use MyCreate app (it takes under 3 minutes to learn) to take photos and create their own stop-motion films using everyday objects and monsters they created themselves from simple foldable templates.
So much more to explore!

With over 120 units, our EXITO & Success pre-k curriculums, our Kindergarten readiness curriculum and so much more, there’s plenty to engage and inspire at www.sparkedinnovations.net and it’s all free to use!

Take a look around and see what’s to be found! You just might find something that sparks a few ideas of your own! And don’t forget to contact us about any questions!