

## Dear Educator:

It is never too early to encourage students to become problem-solvers. Understanding how to identify a problem and use their creativity to develop a solution is a life-long skill that can be used in every facet of their lives.

Inventing does just that. Learning about inventions and understanding the process that inventors go through to develop their inventions helps students to become **critical thinkers** and **problem-solvers**. To identify a problem and use their creativity to develop a solution is a life-long skill that can be used in every facet of their lives. Students will ultimately be the ones to “invent” the future. Starting this learning process at a young age will *set them up for success*.

After you complete all of the provided activities review them with your students and break down the different parts of the invention process that they have learned: Observing, problem identification, solution brainstorming, and creating/designing solutions! Want to keep inventing? Coming soon, we are even providing a guide to run an invention fair at your school!

## Standards:

Below find overarching Next Generation Science Standards for the unit. In addition, at the end of this guide you will find a chart that shows alignment for each activity with NGSS and Common Core standards for each activity.

### Next Generation Science Standards

#### K-2-ETS1-1.

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

#### K-2-ETS1-2.

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

#### K-2-ETS1-3.

Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.



Have your students join the Young Inventor's Club by going to: **[theyounginventorsclub.com](http://theyounginventorsclub.com)**

## Components:



### Educator Guide:

This guide will assist you in navigating through the activities, with implementation suggestions and alignment to standards where applicable.



### 8 Activities:

The 8 activities outlined in this guide are available for download and designed with your kindergartners in mind. They offer challenges that can be done in the classroom or at home.



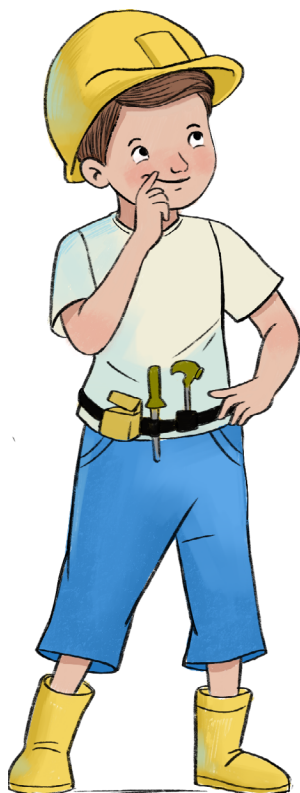
### Young Inventor's Invention Fair:

A great way to end the unit on Invention with an Invention Fair in your classroom, with other classes, or even schoolwide to encourage young inventors everywhere.

## How to Use This Program:

We suggest that you review the activities outlined below, download them from your dashboard, and copy as needed. Each activity can be completed in a class period or can be done at home for extended learning.

The activities do not need to be done in the order presented below. You can mix and match to align to your current curriculum. Be sure to read through each activity to be sure you have all of the materials needed before you start.



## Overview

The Young Inventor's Club offers a free resource to introduce inventive thinking to children through a series of hands-on, project based activities. With each activity students will use creativity and critical thinking to solve challenges presented. The activities incorporate S.T.E.A.M. lessons and are based on the "If Not You, Then Who" book series.

We encourage you to purchase a set of books with a bonus Inventor's Journal at IfNotYouBooks.com. These books bring the educational lessons and activities to life with engaging stories of young inventors.

### Program Objectives:

- Engage students in development of key 21st Century skills including **creativity, critical thinking** and **problem solving**
- Introduce the **invention process**
- Support existing **S.T.E.A.M. curriculum** with fun and inspiring content
- Empower students to view problems as opportunities with the **tools to invent solutions**

## Challenge #1: Design A Board Game

Challenge your students to use the template provided to create a board game.



Inspired by Book 3:  
"Let The Games Begin!"

1. Introduce this activity by sharing with your students that inventing requires all sorts of skills including math. As a group, see if you can come up with a game that uses math. (For example, baseball uses math by counting balls and strikes, Football uses math by counting downs and yards etc.).
2. Have your students follow the instructions on the activity to design their board game. They can decorate it to make it their own! And... they will use numbers to move their players along the path.
3. If you have the book, "Let The Games Begin" from the "If Not You, Then Who" book series, the students will enjoy hearing about the games that Brooke & Noah invent with their friends.

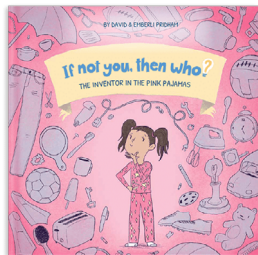
## Challenge #2: Ice Cream Flavor Fun

This activity incorporates science into invention. Students will learn how to make ice cream in a plastic bag and... invent a new flavor at the same time.

1. Introduce this activity by discussing how all of your favorite things were invented at some point. Sometimes those inventions were by accident. A great example of this is how a young 11-year old, Frank Epperson, invented the popsicle when he left cup of juice outside with a stirring stick in it overnight and it froze in the cold creating the first ever popsicle!
2. This activity works best in teams of 2 or 3 students working together. Follow the instructions on the activity to make the ice cream. Your young students will need adult supervision for this, so you can even do it as a class group. The kids will have fun inventing their own, new flavor!

## Challenge #3: Coral Reef Creations

Part of being an inventor is observing the world around you. With this challenge, your students will recreate some of the things that are observed under water in a coral reef.



Inspired by Book 1:  
"The Inventor In  
The Pink Pajamas"

1. Introduce this activity by talking about Coral Reefs and what they are. You can then talk about Jacques Cousteau and how he wanted to observe the sea life under water but needed to find a better way to do it. He invented the aqualung which enabled him and his team to stay under water for a longer time to observe and collect data. You can also share some photos of a coral reef and some of the things that a diver might find in the reef.
2. Challenge the students to create things they might find in a coral reef using the crafting materials listed in the activity. You can always add additional materials or use what you have available in your classroom.

## Challenge #4: Old Becomes New Again

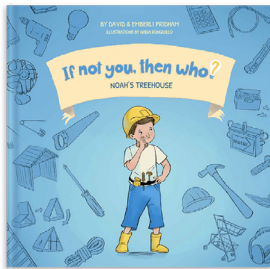
Starting at a very young age, students learn how technology is used in our everyday life. In this activity they will begin to see how inventions are often improvements that make something better.

1. Introduce this activity by talking about technology that your students use every day. Maybe it is their Chromebook or tablet. Possibly just turning on the light switch in the classroom or doing something on the smartboard. Technology is all around and changing all the time. Most of the technology that they use are improvements on things that were invented many years ago and have evolved through the years. The evolution comes from someone saying, "I bet we can make that work better, faster, or smarter".
2. With this challenge, print the matching page and make copies for each student. They will match the older inventions with the newer versions. You can add to this by coming up with other examples as a class.

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## Challenge #5: Tower of Power

Inventing also involves engineering. When an inventor designs something they have to engineer how it is designed so it works well. This activity will challenge your students to be engineers.



Inspired by Book 2 :  
"Noah's Treehouse"

1. Introduce this activity by talking about bridges and tall buildings. What types of materials are used to build these structures? What do they think will happen if the materials are not put together right? There are special types of drills and screws that are used to make sure everything is secure. Someone had to invent these items. Scientists and engineers work together to be sure that the structures are built correctly.
2. With this challenge, the students will be engineers. They have to figure out how to build their towers, so they won't fall over when you put something on the top. This is a great activity to do in teams. Students will need to work together to build their towers.

## Challenge #6: It's Puzzling

Design is part of inventing. Determining how something goes together is important. This challenge will help young students look at shapes and how they connect to form something larger.

1. Introduce this activity by introducing the idea of design and prototype. When an inventor comes up with a new idea, they need to think about how they might make it so it works. What will it look like? How will it be built? Often an inventor will build a prototype which is a model of their invention.
2. With this activity, students will create puzzles out of pictures they find in a magazine. It will help them see how pieces fit together.

## Challenge #7: Flashlight Constellations

This activity is a fun activity for students to learn about stars and at the same time create their own star gazing creation.

1. Introduce this activity by talking about stars and constellations and the tools that scientists use to look at them and study them. The very first telescope was invented in 1608 by a Dutch lens maker, Hans Lippershey. In 1609, Galileo improved on it with his own telescope invention.
2. This activity will challenge students to make a fun indoor telescope where they will be able to look at stars on their ceilings.

## Challenge #8: Recycled Flowerpots

Your students have probably already heard Recycle, Reuse, Reduce in reference to helping to preserve our environment. With this activity, they will learn that one person's trash can be another person's treasure.



Inspired by Book 4 :  
"We're Going Green!"

1. Introduce this activity by talking about reimagining new uses for discarded items. In an effort to preserve our environment, we need to recycle and reuse rather than discard items. One way to do that is to reimagine or invent a new use. Maybe an old can becomes a pencil holder or a cardboard box becomes a toybox. Ask the students to think of other items they might find new uses for.
2. If you have the "Going Green" book from the "If Not You, Then Who?" book series, the students will love to hear about what Noah invented for his school science fair.
3. With this activity, they will take used plastic bottles and with some assistance from an adult, cut them down and make them into beautiful flowerpots.



English Language Arts Standards	Design A Board Game	Ice Cream Flavor	Coral Reef Creations	Old Becomes New Again	Tower of Power	It's Puzzling	Flashlight Constellations	Recycled Flowerpots
<b>CCSS.ELA-LITERACY.L.K.1.D</b> Understand and use question words (interrogatives) (e.g., <b>who, what, where, when, why, how</b> ).	X	X	X	X	X	X	X	X
<b>CCSS.ELA-LITERACY.L.K.1.E</b> Use most frequently occurring prepositions (e.g., <b>to, from, in, out, on, off, for, of, by, with</b> ).	X	X		X	X	X	X	X
<b>CCSS.ELA-LITERACY.L.K.4.A</b> Identify new meanings for familiar words and apply them accurately (e.g., knowing duck is a bird and learning the verb to duck).				X			X	
<b>CCSS.ELA-LITERACY.L.K.5.A</b> Sort common objects into categories (e.g., shapes, foods) to gain a sense of the concepts the categories represent.	X		X	X		X	X	
<b>CCSS.ELA-LITERACY.L.K.5.C</b> Identify real-life connections between words and their use (e.g., note places at school that are colorful).		X	X	X	X	X	X	X
<b>CCSS.ELA-LITERACY.L.K.6</b> Use words and phrases acquired through conversations, reading and being read to, and responding to texts.	X	X	X	X	X		X	X

Mathematical Practice Standards	Design A Board Game	Ice Cream Flavor	Coral Reef Creations	Old Becomes New Again	Tower of Power	It's Puzzling	Flashlight Constellations	Recycled Flowerpots
<b>CCSS.MATH-CONTENT.K.CC.A.1</b> Count to 100 by ones and tens	X	X						
<b>CCSS.MATH-CONTENT.K.CC.A.1</b> Count forward beginning from a given number within the known sequence (instead of having to begin at 1.	X	X						
<b>CCSS.MATH-CONTENT.K.CC.A.1</b> Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).	X	X						
<b>CCSS.MATH-CONTENT.K.CC.A.1</b> When counting objects, say the number names in the standard order, pairing, each object with one and only one number name and each number name with one and only one object.	X	X					X	
<b>CCSS.MATH-CONTENT.K.CC.A.1</b> Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.	X							
<b>CCSS.MATH-CONTENT.K.CC.A.1</b> Correctly name shapes regardless of their orientations or overall size.			X			X		
<b>CCSS.MATH-CONTENT.K.CC.A.1</b> Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.			X			X	X	
<b>CCSS.MATH-CONTENT.K.CC.A.1</b> Compose simple shapes to form larger shapes. For example, "Can you join these two triangles with full sides touching to make a rectangle?"						X		