



Inventor's Challenge

January 23 to February 24, 2017



For more info visit:
inventorchallenge.org
#inventorchallenge

Playbook Contents

Welcome Letter from AT&T	3
Why We Love the Inventor's Challenge	4
The Inventor's Journey	5
Observe, Question & Identify Problems	7
Design, Make & Play	9
Document, Demonstrate & Share	11
Inspirations + Getting Started	13
Winners from 2016	15
Suggested Materials	16
How to Join	17
Checklist	18
How to Enter the Contest	19
Creating and Submitting Your Video	20
Prizes and Judging	21

Welcome Letter from AT&T

Dear Playmakers:

On behalf of all of us at AT&T and the Imagination Foundation, welcome to the second annual Inventor's Challenge! Last year, more than 350 students – from New York City to Nairobi, Kenya – sent in their ideas for how to solve all sorts of issues impacting their schools and communities. This year, we hope even more young inventors join the fun. We can't wait to see the cool, imaginative and creative solutions you will make!

Playing often leads to inventing new things. Even the most advanced technologies and machinery are often created through tinkering – taking things apart and putting them back together again. That's why AT&T, through our signature philanthropic program AT&T Aspire, supports programs like the Inventor's Challenge. We want to encourage young innovators and problem solvers like you to use the tools around you to build a better tomorrow.

The Inventor's Challenge cultivates skills that are critical to student success in the 21st century: imagination, problem-solving, teamwork, optimism, empathy, the ability to experiment and the willingness to take risks. It turns out these are the same skills our innovators at AT&T need.

We're so proud of all the students who participate in this competition and hope the hands-on exploring, discovering and making to address a problem in your community will be an invaluable and awesomely fun experience.

We can't wait to see what you make. Good luck, and welcome to the Challenge!

– **Nicole Anderson**

AVP of Social Innovation and President of the AT&T Foundation

Why We Love the Inventor's Challenge

"The true sign of intelligence is not knowledge but imagination."

– ALBERT EINSTEIN

The purpose of the Inventor's Challenge is to inspire kids to dream up inventions that help solve problems in their schools or communities. **Invention**, the act of using one's curiosity and imagination to create something new and useful, and **innovation**, a change or improvement to something already in existence, are highly prized skills, becoming increasingly necessary in 21st century life and work. Educator Tony Wagner includes Critical Thinking, Collaboration, Initiative and Entrepreneurship, and Curiosity and Imagination as components of his Seven Survival Skills for success in the 21st century workplace (2014). Invention and innovation require the exercise of all these skills. However, while creative and imaginative thinking may often be highly valued in the workplace, they are often not cultivated in everyday schooling environments. The Inventor's Challenge provides an opportunity for kids, both in and outside of school, to engage in a creative process that will foster 21st century skills and be really, really fun!

An important tenet of the Inventor's Challenge is that invention is less an act of solitary genius and singular "aha" moments, and more an ongoing process involving collaboration and the playful iteration of ideas. The Imagination Foundation's tagline is to "imagine the world we can build" –



Advice from an
Imagination Chapter Leader

Start with Things that Bug You!

"A great invention starts with thinking about what bugs you. Maybe something irks you about your desk at school or your bedroom. If something bugs you, it probably bothers others as well, so if you can solve a problem that affects you, you can help others, too!"

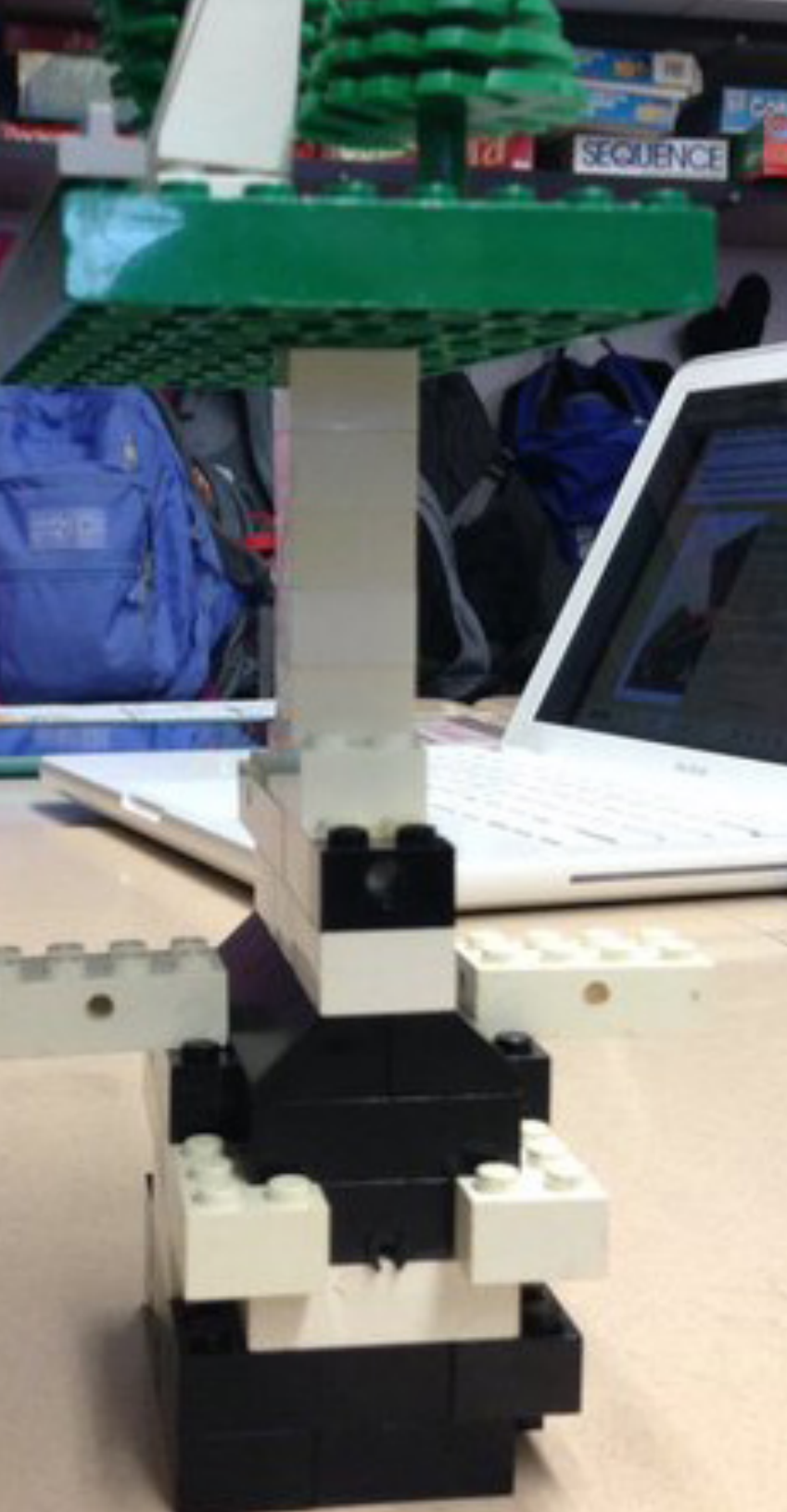
– Steve Auslander, Indianapolis, Indiana



a world where creativity is a core social value, where empathy and optimism drive our creative processes, and where all kids have the tools and support they need to build the things they imagine. These goals are best exemplified in last year's Inventor's Challenge contest winner, Alexander Knoll, who invented the Ability App. This App helps identify disability supports in any given community (see the link to his invention video below). We believe in inventing with purpose, in sync with our community and kids' needs.

This Playbook provides guidelines for the challenge and how to enter the contest. While the contest adds an exciting component to the Challenge, the primary goal is for kids to flex their imaginations and get to finding and solving problems!





The Inventor's Journey

"I do not think there is any thrill that can go through the human heart like that felt by the inventor as he sees some creation of the brain unfolding to success.

– NIKOLA TESLA

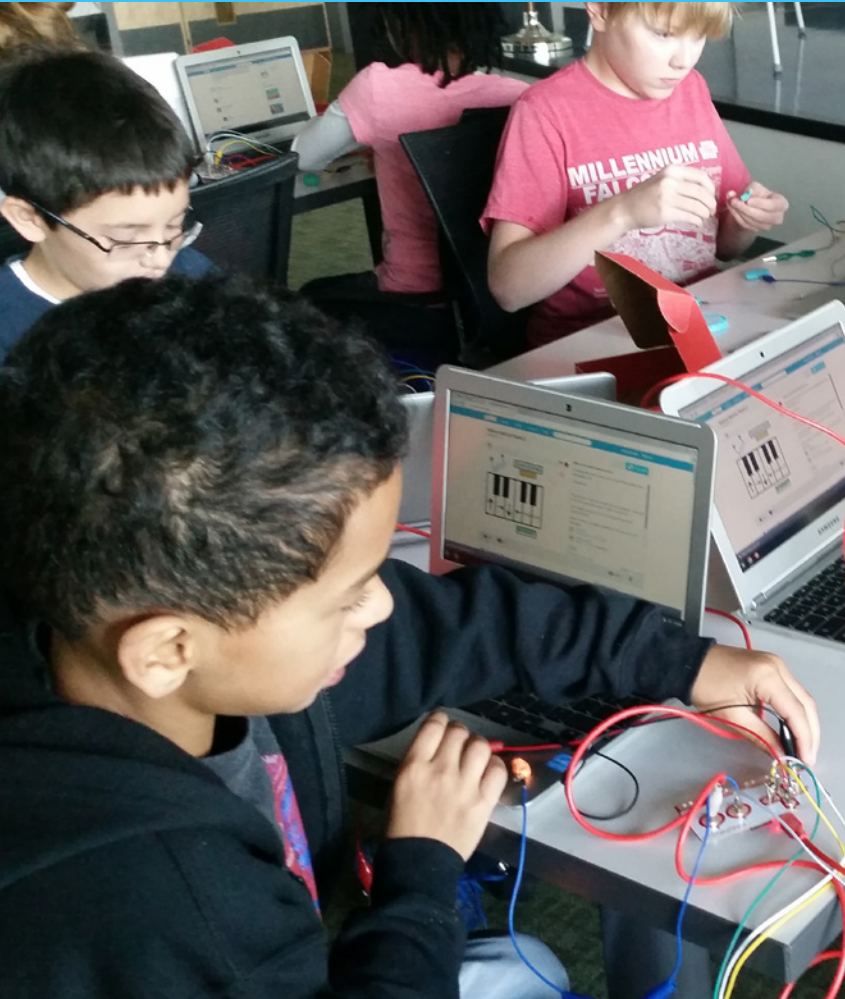
In the next few pages, we'll share some ideas to help you set a stage that's ripe for invention; however, whether in the classroom, community or home, we want participants to organize their activities in a manner that best meets their needs. For example: kids can work in small groups, in pairs, or alone (or in any combination of these); some kids might want to draw sketches or brainstorm ideas in a journal before building prototypes or joining collaborative sessions. Others might gain inspiration from tinkering with materials without yet having any specific idea in mind.

However the journey might look for an individual inventor, we like to emphasize three important activities of the journey. These activities may follow a particular order, or not, and a participant may repeat elements of this process a few times before the work is completed. The three key activities are:

- Observe, Question & Identify Problems
- Design, Make & Play
- Document, Share, Give & Receive Feedback

An Inventor's Story

Lily Born, age 11, observed her surroundings closely and found a problem: her grandfather had Parkinson's Disease, and because of tremors, had trouble holding his drinks steady and would often spill. This inspired Lily to invent the Kangaroo cup – a three-legged unbreakable, spill-proof cup. Lily wanted to help one person in her life, but her invention ended up being useful to countless others!



THE INVENTOR'S JOURNEY

Observe, Question & Identify Problems

"Invention, it must be humbly admitted, does not consist in creating out of void but out of chaos."

– MARY SHELLY

As a facilitator of the inventor's journey, it's important to provide space for kids to wonder about things, to closely observe what's around them, and to ask lots of questions. This is a process whereby a child can find and shape the problem(s) he or she wants to address. Creative minds work best when given the space and time to explore problems in a manner that best suits their strengths.

One can help kids in this problem-finding process by determining a scope or context for kids to focus on: encourage them consider their classroom, school or local (or even global) community and to make detailed observations about the kinds of activities that interest them in these contexts. There are many ways to go about this. For example, participants could take a walk through their community or school, speak with others (such as store owners or teachers) about challenges they observe or experience in these spaces. Kids can jot down observations in a journal, or take pictures and/or recordings. As kids take their observations back to the group for conversation, consider asking them probing questions about what they observed: what problems did you notice? Did you see solutions that others have implemented to address those problems? If so, how might you improve those solutions?

Observe, Question & Identify Problems

Tools for inspired problem-finding are:

- CLOSE OBSERVATION - find a site in the community, like a classroom or playground. Record how people use the space, and any difficulties they encounter. Remember, no idea is too small for innovation.
- TALK TO OTHERS - interview community members in order to discover everyday problems they confront, that you may or may not notice.
- CONSIDER EXISTING INVENTIONS - think of items people use every day – someone must have invented them at some point. How and why? How could a particular invention be made to work better? Kids can also bring items from home they think need to be improved.
- USE A COMMON TOOL IN A NEW WAY - think about the Little Mermaid who used a fork to brush her hair. Encourage youth to think outside the box about tools.
- EXPLORE THE HISTORY OF INVENTIONS - reading about the insights of others can inspire your own imagination.

Advice from an Imagination Chapter Leader

Revel in the Wonders of the World



“Decades of research show that the objects children create are not just objects, like mass produced toys for example, but representations of children’s ideas, changing relationships with the material world around them, and possible uses that they have imagined in an ever widening understanding of the social world. Over time, these objects gain a special status – they enable conversation with things around them, how things work, how some materials respond in ways that others don’t. The best spaces for learning, hence, are ones that enable children to create, make stuff out of stuff, and share, and revel in the wonders of the material and natural world around them. Mistakes and awkwardness are celebrated as a part of the process.”

– PRIYANKA PAREKH, Phoenix, Arizona

An Inventor's Story

Many inventions came from mistakes, or were unintentional. The first Popsicle was invented by accident in the winter of 1905 when 11-year-old Frank Epperson left a mixture of powdered soda and water, along with a stirring stick, outside in the cold overnight. It froze and became a delicious treat. Epperson went through iterations: at first he called his invention the "Eppsicle," but later changed it to "Popsicle." He also experimented with different flavors.

THE INVENTOR'S JOURNEY

Design, Make & Play

Play, design, make mistakes, redesign, play some more!

As participants begin to generate specific ideas, they will need to confirm their design and begin constructing their inventions. Sometimes effective building happens after exhaustive ideation and/or planning, sometimes as part of the earliest stages in a design process itself, and sometimes as part of the problem-finding stage before kids even have an idea of what to invent. We recommend that kids document their building process, this can happen using a media platform of their choosing, such as a video diary, blog, hard copy journal, etc. That way, kids have evidence of the evolution of their designs. As the building process involves play and iteration, allow inventions to change and evolve. Most important – have fun!

Many children will be using physical material as they build prototypes; but some will engage in the digital space by building with code; and some will use both. Some groups participating in this challenge may have access to more sophisticated fabrication devices (such as laser cutters); others may only have scissors, tape, glue, etc. Whatever resources you have... just build it! :-)



Design, Make & Play

Some practical advice for this stage of the journey:

- **PROTOTYPE** - build a model of the invention with cardboard or other material. Remember, your model doesn't have to be fully functional yet! And work with whatever resources you have.
- **HAVE FUN WITH MISTAKES** - some inventions seem like failures at first. Some arise by accident. Look carefully at and reflect on the steps in your process. Even if some steps seem like "mistakes," reflection can help generate new and improved ideas.
- **ITERATE** - creations are rarely – if ever! – perfect the first time. Try it out! In fact, try a few versions of your idea. Through careful observation and reflection, modify and improve your prototype. Give and receive feedback from others.
- **PLAY** - playing around with materials can help inspire ideas. Playing with prototypes or a working model can help identify its strengths and weaknesses. And it makes the process fun. Optimism and good attitudes lead to creative solutions!

Advice from an Imagination Chapter Leader

How do you Treat Failure?

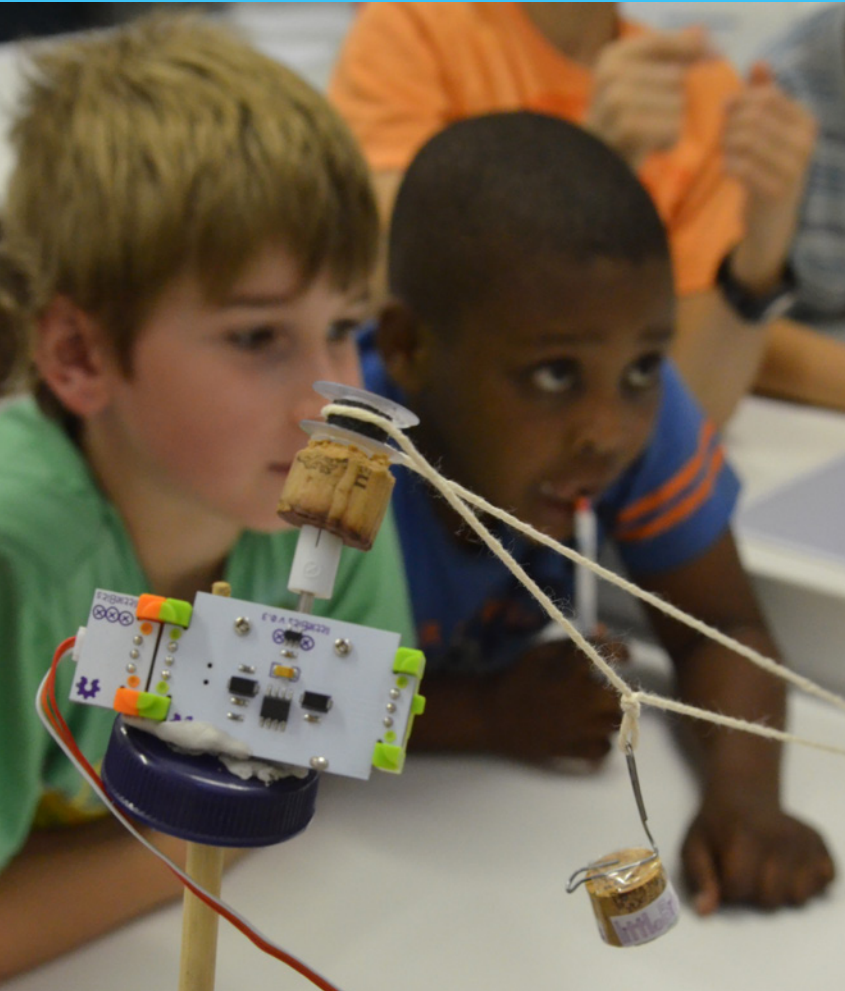
"While humans set out to create and invent useful tools, apps, gadgets, etc., it is highly likely that many will fail. Some will treat their failure as a sign to stop what they are doing. Some will modify and change their ideas until they make their ideas work and of course, some will hit the jackpot. While the end goal is a great reward, the process or journey is far more rewarding. The learning process, experimentation, prototyping, redesigning, collaborating, being creative, making discoveries...it all makes for a real adventure. What are you waiting for?"

– STEVE SHERMAN, Cape Town, South Africa



An Inventor's Story

While playing around with mini computers, [Quin Etnyre](#) came up with different computational sensors that he could use for fun projects. He now sells his inventions and learning kits at his website [Qtechknow.com](#) and teaches classes for people of all ages who are interested in learning how to make interactive projects from Quin.



THE INVENTOR'S JOURNEY

Document, Demonstrate & Share

Document the experience through multiple platforms, and let the kids suggest tools or platforms they'd like to use. Children should share their creations in a meaningful public setting, such as in the classroom, at an event, or online.

It is important to create an open and supportive environment where inventors are encouraged to carefully document the development of their ideas, designs, failures and successes. Kids can use journals or notebooks to make lists, jot down inspiration, sketch and draw pictures, etc. They can take pictures, keep a video log, or create audio recordings. What is important is that participants track and share their progress as part of the journey as a way to reflect, assess, and evaluate. As Thom Markham, psychologist and school redesign consultant, states "There is no innovation without rumination."

A "demonstration" of the invention is critical to the process as well. This may happen multiple times as the designs iterate to solicit feedback and support, or it may happen as a capstone to the experience.

Document, Demonstrate & Share

Tools and methods to help children document and share their work include:

- JOURNALS or SKETCHBOOKS - to write or draw
- SMARTPHONES - to capture photos, video and or audio of the process
- YOUTUBE or VIMEO CHANNEL - for your group where you can post and update videos/video logs of works in progress
- MEDIUM.COM or other ONLINE BLOG - have participants use a blog site to document their progress with pictures and comments
- SHARE PHOTOS - on Instagram or Facebook
- SHOUT OUT YOUR PROGRESS - on Twitter

Advice from an experienced Imagination Chapter Leader

Become a Mad Scientist!

"I tell my students we are a 'mad scientist laboratory' in my Imagination Chapter. And I make sure I've got a wacky assortment of materials on hand. I ask families to send in odds and ends like paper towel tubes, plastic containers, fabric scraps. That said, we are ORGANIZED mad scientists - we keep sketches of our ideas, and our revisions, and our revisions again. The final tip I'd share is to circle up your students at least once a week so each person can share progress, describe obstacles, and receive interesting ideas."

– KERSTIN RAO, Rhode Island, Connecticut



can you invent...

a safer knife?

a better lunch box?

the perfect alarm clock?

a new way for storing books?

a sustainable fashion line?

a space ship?

a candy storage outside
of your siblings' reach?

a fun way to package
chocolate?

a more fun jump rope?

Inspirations + Getting Started

"To invent, you need a good imagination and a pile of junk."

– THOMAS A. EDISON

We were so impressed by the amazing inventions submitted during the 2016 Inventor's Challenge – we think they will inspire you and your kids as well! The winners of the 2016 Inventor's Challenge and their inventions are featured below. Click each link to view the inventor's video submission for the contest.

Winners from 2016

We are proud to present the **2016 Inventor's Challenge Contest Winners:**

First Place: the Ability App

The Ability App was invented by 11 year old, Alexander Knoll (Post Falls, ID), with the intention to help people with disabilities and their caregivers search for specific disability friendly features, services and employment at locations they select. Disability friendly features in public spaces are listed on the app such as wheelchair ramps, Braille signs and menus, service animal friendly locations, wheelchair friendly restaurant seating and more.

[The Ability App](#)

2016 Inventor's Challenge Contest Winners –

continued:

Second Place: the Waterbot

Bram Schork (Villanova, PA) invented the Waterbot. This invention allows people to not have to worry about watering their plants as it uses a soil moisture sensor – instead of a traditional timer – to gauge when plants need water.

[Waterbot](#)

Third Place: RockMate

Annalise Groves (Hollis, New Hampshire) invented the RockMate. As an avid rock climber, she wanted to be able to safely take pictures while climbing. She invented a phone holster that attaches to one's climbing harness on a retractable string; it can be safely stored on one's harness while climbing.

[RockMate](#)

Honorable Mention: The Helping Hat

Miles Whigham (North Palm Beach, Florida) invented The Helping Hat which you can use to store things in while you're walking.

[The Helping Hat](#)

Honorable Mention: Lego-opolis

Lego-opolis is a game invented by Kendall Smith and Brycen Crouse (Mount Airy, North Carolina). The goal is to help others be inspired as they meet building challenges such as "Make an iPad Stand" or "Make an Alien" with Legos. As you build, you move around the board – the first one to the finish line wins!

[Lego-opolis](#)

INVENTIONS TO HELP YOUR SCHOOL

can you invent...

a way to make crossing the street safer?

a way to make it easier to carry books between classes?

a fun way of using technology for learning?

a more functional desk?

a new locker system?

a better storage system for your classroom or Imagination Chapter?

INVENTIONS TO MAKE PEOPLE HAPPY

can you invent...

- a new game?
- a movie script and a garage production?
- a new sport?
- new piece of playground equipment?
- a roller-coaster ride?



INVENTIONS TO IMPROVE YOUR LIFE

can you invent...

- a way to make daily exercise more fun?
- way to make your daily school bus ride less bumpy?
- a way to help senior citizens in your community?
- a pet-friendly park?
- something that reduces the use of plastic bags in grocery stores?



INSPIRATIONS + GETTING STARTED

Suggested Materials

We encourage you to use what you have lying around the house and also ask neighbors and for scraps and materials. Re-use and recycle whenever you can. If you start early, you'll be surprised by how much you can collect – for free!

CARDBOARD

- Used cardboard boxes (large & medium sizes)
- Cereal boxes
- Shoeboxes

RE-USED / RECLAIMED

- Empty strawberry/fruit containers
- Empty bottles and bottle caps
- Egg cartons
- Milk cartons
- Paper towel and toilet paper tubes
- Old fabric, pillowcases or clothes cut into scraps
- Old stuffed animals and toys

TOY STORE / HOME

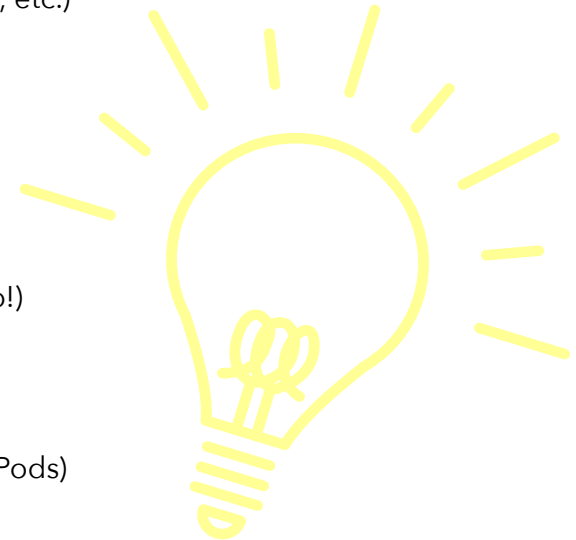
- Sport or bouncy balls of various sizes
- Various (dollar) toy prizes
- Old action figures
- Home or school items to improve (with permission)

OFFICE SUPPLY / ART STORE

- Various kinds of tape
- Scissors, box cutters (for older kids or parents)
- Markers and pencils
- Tempera paint and brushes
- Decorations (sequins, googly eyes, confetti, etc.)
- Popsicle sticks
- S-hooks, staplers
- Assorted paper and/or card stock
- Brown paper bags
- Bottles of glue, glue sticks, low-temp hot glue (for older kids or parents)
- Computers (the invention can be digital too!)

DOCUMENTATION AIDS

- Notebooks
- Cameras (e.g., in smartphones, tablets, or iPods)
- Egg cartons to hold phones or tablets
- Good lighting
- Internet connection to upload video





How to Join

The following pages provide all the information you need to help you plan and run an Inventors' Challenge, including the submission process for the contest.

- Checklist
- How to Enter the Contest
- Prizes and Judging

HOW TO JOIN

Checklist

Things to Remember

- Be careful, safe, kind, and courteous
- Everyone participates
- Think outside the box - don't be afraid to break the mold!
- Keep the mood light and have a great time

Before the Challenge

- Decide who will participate: small or large group?
- Register your challenge at inventorschallenge.org
- Will you hold a showcase of final inventions? Get the word out!
- Secure a location
- Find a storage area and collect cardboard and other materials
- Contact local sponsors for supplies & donations (used cardboard, food, prizes, arts materials)
- Ensure you have appropriate tools to take video (e.g., smart phone)
- Ensure you have an account set up on a video site like YouTube

During the Challenge

- This Challenge begins on or after January 23, 2017
- Creativity starts with inspiration, so think of experiences that will get kids energized and thinking!
- Provide space and materials for building multiple prototypes and iterations
- Encourage youth to document their

After the Challenge

- Reuse or recycle leftover materials. Visit search.earth911.com
- Share photos, video and stories online with #inventorschallenge & #ATTimpact
- Explore other chapters' invention videos
- If you want, host a showcase to celebrate all of your kids' inventions, and invite the wider community to come



Advice from an
Imagination Chapter Leader

Inventor's Challenge Tour

As a celebration of the kids' work, we took their designs "on tour" and displayed their inventions at the local hotel, in school, as well as in the local kindergarten and high school. The kids were really proud! We produced display boards that included questions each had answered about their specific invention. The Tour gave high visibility to the hard work done by our kids and hopefully inspired many others to let their creative juices flow!

– IZZY JOWETT, Santa Maria di Leuca, Italy



HOW TO JOIN

How to Enter the Contest

If you want to compete, we invite you to upload an original video of a creative kid (or creative kids) showcasing one selected invention. You must be formally registered at inventorchallenge.org and if so, we will send you a form to complete with information about the selected invention, and a place to upload a short video demonstrating its function.

The 2017 Inventor's Challenge runs from **Monday, January 23 through Friday, February 24 at 11:59 pm PST**. Remember to register at inventorchallenge.org. Only those who register will have the opportunity to enter the contest.

HOW TO JOIN

Creating and Submitting Your Video



This section provides information on how to create and submit a video for the context portion of the Inventor's Challenge. Videos will be added to [Imagination Foundation's Inventor's Challenge YouTube Playlist!](#)

- Register your challenge at inventorschallenge.org
- Choose one invention you want to showcase in each video
- Tips on what to include in your video:
 - What's the name of your invention?
 - What problem does it solve?
 - What does your invention do?
 - What inspired you to create your invention?
 - Who does your invention help?
 - Did you run into any challenges? How did you overcome them?
 - Share your ideas, sketches, and prototypes.
- Recommended length: 3 minutes or less
- Set the video in a quiet location with good lighting and a non-distracting background
- Mention the Inventor's Challenge, Imagination Foundation and AT&T Aspire in your video
- Video must be your own original work
- Be sure to read the official rules <http://imagination.org/2017/01/25124/#.WIkBa3eZORs> for additional details
- You will receive a link to a form to complete, IF you have registered at inventorschallenge.org

HOW TO JOIN

Prizes and Judging



Judging

This year, we are accepting contest entries within **4 categories** segmented by age group. They include:

- Lower Elementary (Grades Pre-K-2)
- Upper Elementary (Grades 3-5)
- Middle School (Grades 6-8)
- High School (Grades 9-12)

Prizes

One selected video from each category will receive one prize package! Each prize package includes: a tablet, a [BitsBox](#) and a personalized certificate of appreciation from AT&T Executives!

- Thomas Edison Prize (Grades Pre-K-2)
- Alexander Graham Bell Prize (Grades 3-5)
- Nikola Tesla Prize (Grades 6-8)
- Leonardo Da Vinci Prize (Grades 9-12)

A panel of judges will use the following criteria:

ORIGINALITY: Entries must give an indication of being one-of-a-kind, new, fresh in some demonstrable way. They may draw inspiration or derive from objects that already exist; but they would be an iteration or improvement that is unique.

INSPIRATION POWERED BY A DESIRE TO SERVE OTHERS: Entries should be clearly inspired by an interest in solving a problem identified locally or in one's immediate community. Judges will look for inventions that demonstrate the potential to make a positive difference in the lives of others. The intent behind the design and the benefit of using the invention should be detailed in the video.

CREATIVITY OF DESIGN AND PRESENTATION: Overall, your invention should be unique, clever, useful, well-designed, and smartly presented. Rehearse and possibly even script your presentation in order to make your video clear and engaging. The video will be included in the judging process, so practice and make sure it is a creative, accurate reflection of your amazing invention.

Judging will be conducted by the Imagination Foundation and AT&T. The Panel will evaluate all valid entries and award one winner for each category.

THANK YOU!



imagine the world we can build