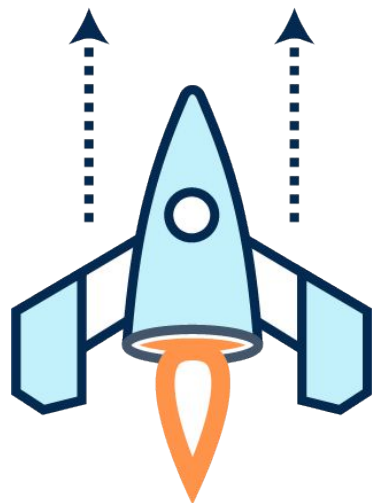




**INVENTOR'S CHALLENGE**



# 2020 Playbook



Brought To You By



**AT&T**



**iMagination.org**



A New Division of

**TWO BIT CIRCUS**  
FOUNDATION

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# Welcome Letter from AT&T



Dear Playmakers,

On behalf of all of us at AT&T, Imagination.org and Two Bit Circus Foundation, welcome to the fifth annual Inventor's Challenge! In 2019, we saw some seriously impressive inventions from over 7,000 kids and teens from pre-k to high school. There were inventions like that from the group of high schoolers who developed "[Stria](#)", a walking aid for the blind; or Mihir's "[Checklistinator](#)", a personalized digital checklist reminder device; and Ethan's "[Gravel Grippers](#)" that helps the elderly in the wintertime while walking over icy surfaces. A number of these brilliant young minds were even featured in their hometown news outlets.

We're seeing that play often leads to new inventions. 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 skills and 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, critical thinking, collaboration, optimism, agency, empathy, the ability to experiment and the willingness to take risks. It turns out these are the same skills our innovators at AT&T use every day. We're so proud of all the students who participate in this competition and we hope that the hands-on exploring, discovering and making to address a problem in your community will be an invaluable and awesomely fun experience for you.

This year, we hope more young inventors join the fun. Need even more motivation? Browse through a list of [last year's entries](#). We can't wait to see the cool, imaginative and creative solutions you submit. Good luck, and welcome to the Challenge!

— Mylayna Albright  
*AVP of Corporate Responsibility at AT&T*

# The Inventor's Challenge

Our 3rd Annual Inventor's Challenge invites kids around the world to dream up inventions that will help solve problems in their homes, schools or communities.

## How To Participate

1

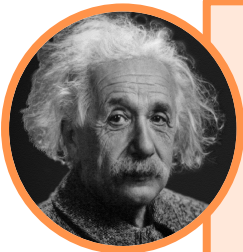
Find a problem you want to solve in your home, school, or community.

2

Invent something to solve it, it could be physical or digital.

3

Make a video to share your invention with the world!



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

— Albert Einstein

Go to [inventorschallenge.org](https://inventorschallenge.org) for more details on how to officially submit your invention for judging in the 2020 Inventor's Challenge

# Why Participate in the Inventor's Challenge?

Invention and innovation are critical to 21st century life and work. However, they are not always cultivated in everyday school environments. We designed the Inventor's Challenge to provide a fun opportunity for kids, both in and outside of school, to engage in a creative, rewarding process that fosters 21st century skills.

This Inventor's Challenge Playbook outlines tools and concepts to help explore the process of invention and provides some inspirational ideas to get you started. It includes guidelines and rules for contest entry (and some cool prizes!). But we want to emphasize that this Challenge is not about winning; it's about getting out there in your school and community and finding some problems to solve, flexing your imagination, and most of all, HAVING FUN!

Thank you for helping us build 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.

*Imagine the world we can build.*





# Inventing Through Creative Play

In this section, we'll highlight important tools and concepts like the Creative Play cycle, Problem-Finding, and the Inventor's Journal, and provide additional resources and activities to help get your kids started on their own inventor's journey.

# What is Creative Play?

Creative Play is a simple process that develops the natural powers of creativity and innovation that all children possess. It is at the heart of the Inventor's Challenge and all of Imagination.org's programs.

Creative Play begins with inspiration and culminates in the sharing of an original artifact made by children using whatever tools and materials are available. In this process, kids open up their minds to what's possible, take chances, solve problems, collaborate and become better creative thinkers and doers.

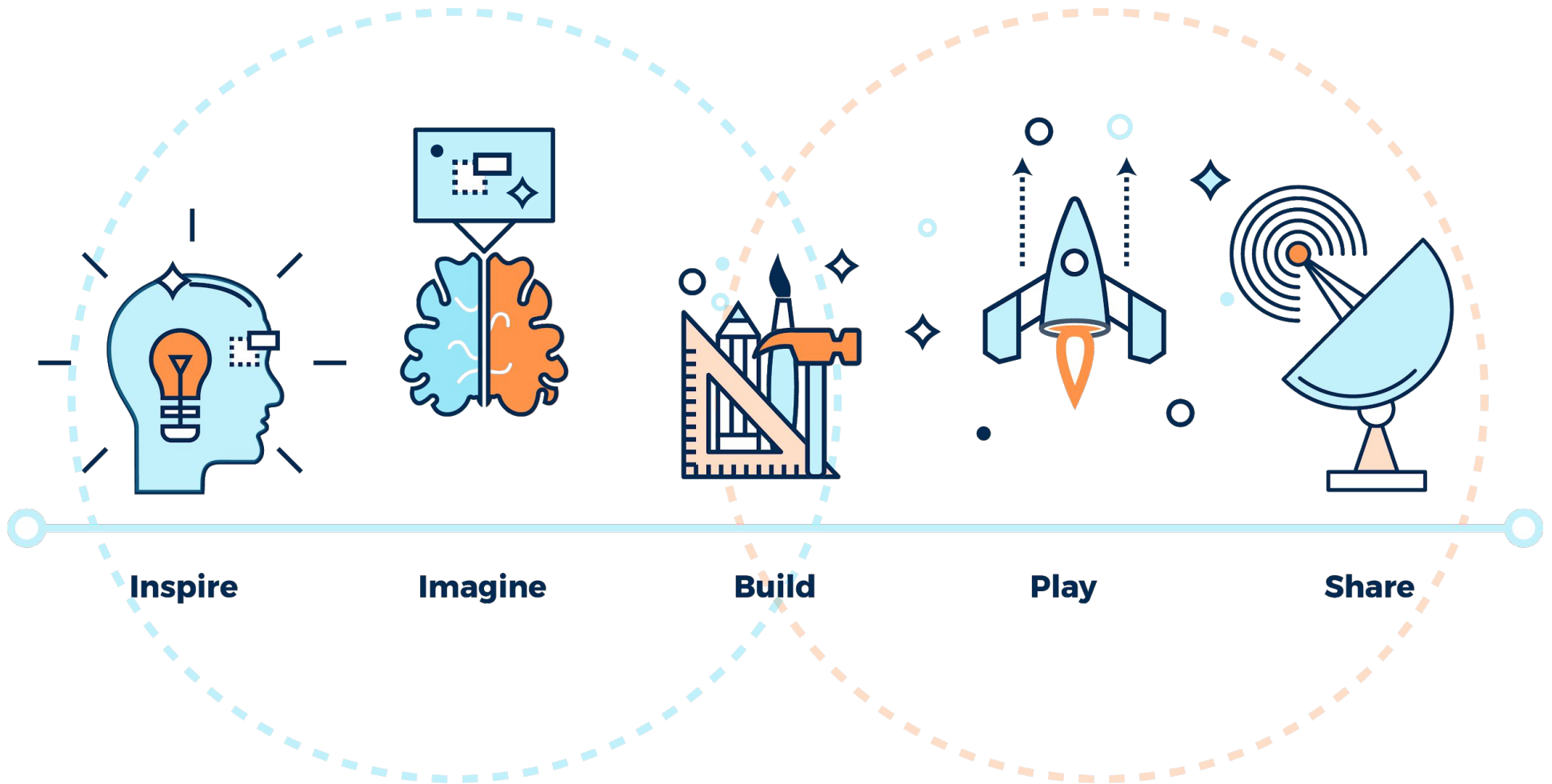
The five components of Creative Play are Inspire, Imagine, Build, Play, and Share. Though an effective Creative Play experience incorporates all five components, remember that the process can start at any point and can move back and forth between various "steps." As you embark on the Inventor's Challenge, feel free to organize activities in the way that works best for you and your kids.

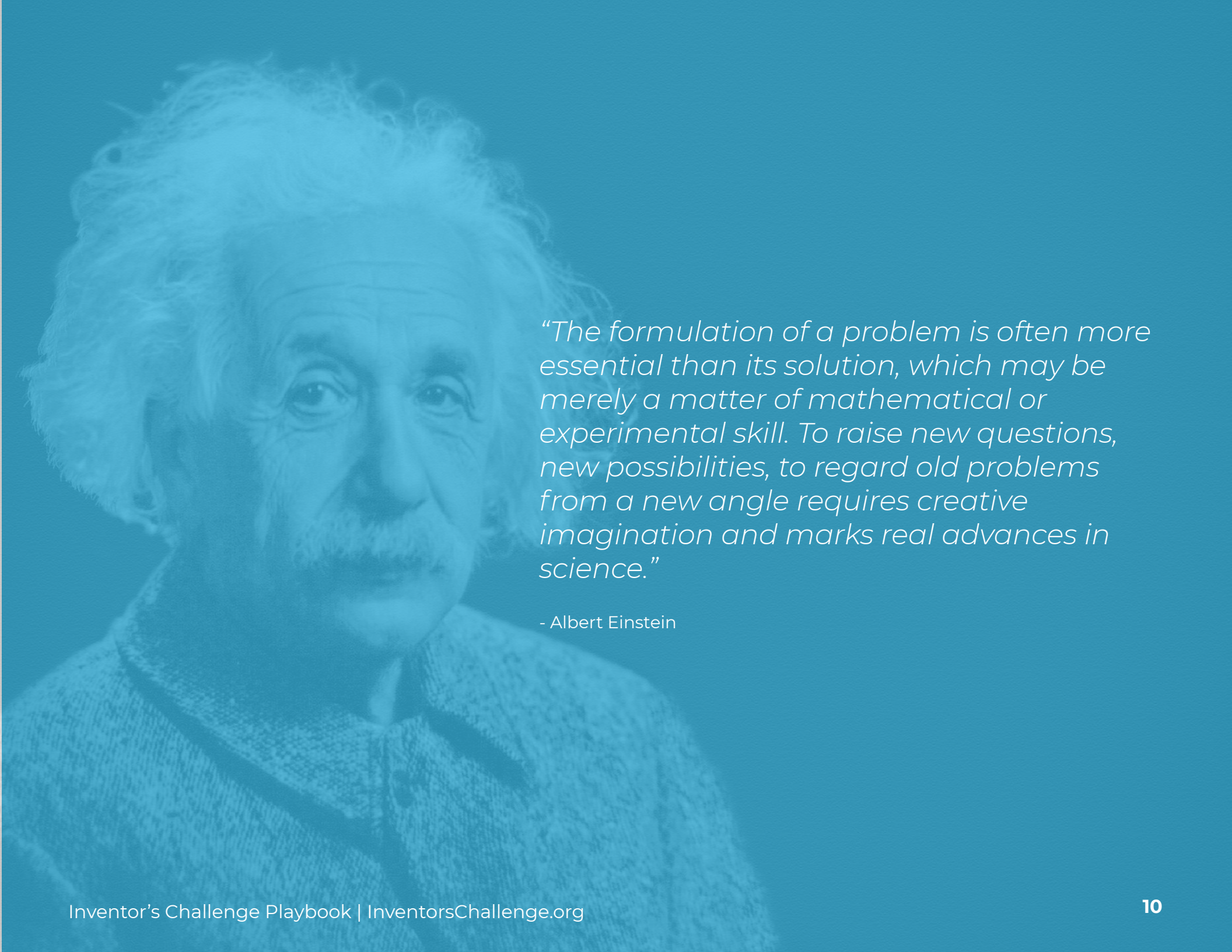




# 5 Components of Creative Play

Decades of research support the power of Creative Play, it's important to remember it's a natural process for children requiring few resources and little facilitation.





*“The formulation of a problem is often more essential than its solution, which may be merely a matter of mathematical or experimental skill. To raise new questions, new possibilities, to regard old problems from a new angle requires creative imagination and marks real advances in science.”*

- Albert Einstein

# Inspire

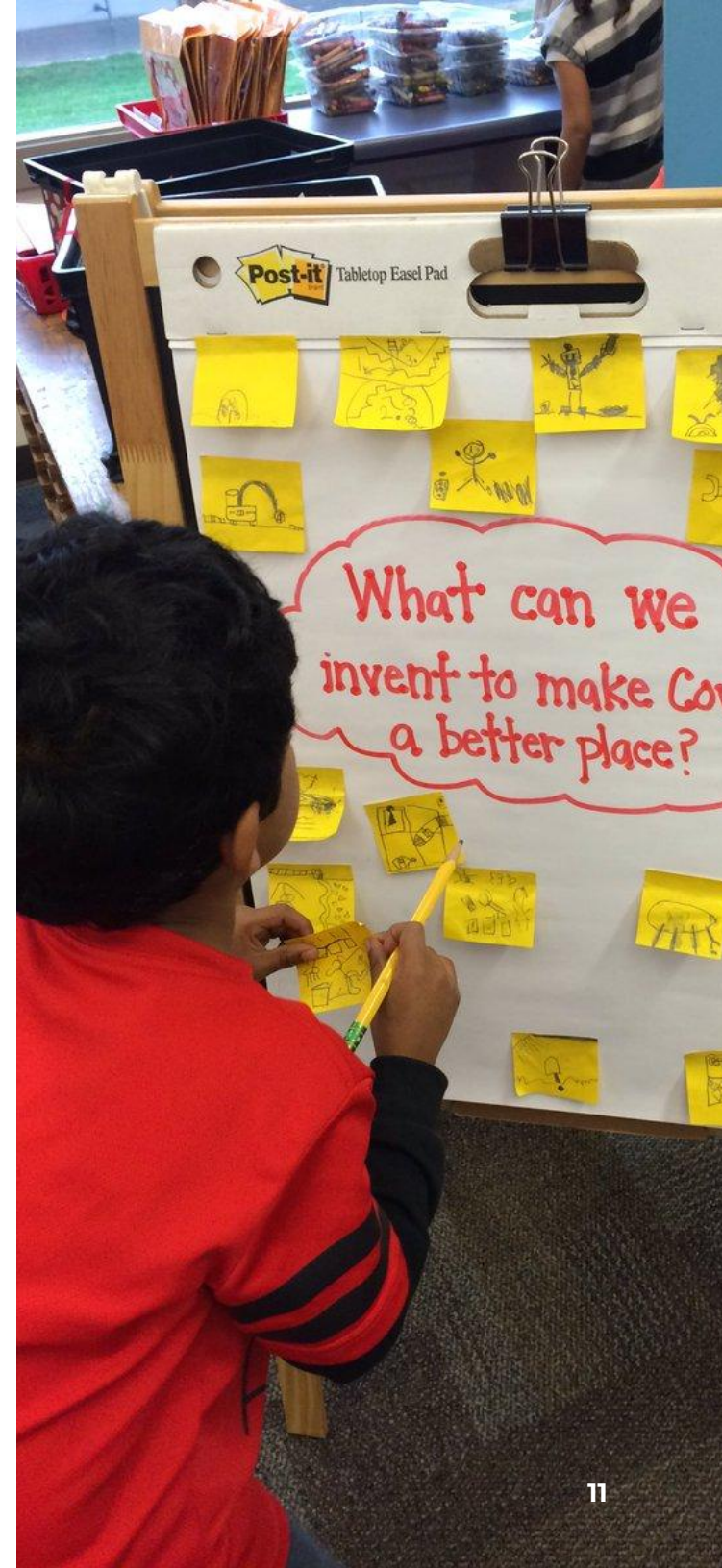


**Inspiration is where creativity starts. It's the spark that moves us to explore and act, to find out more, to create something.**

Have fun with this stage – and revisit it often. Kick things off by introducing the Inventor's Challenge and getting your kids to think about the inventions and innovations all around them. What are their favorite inventors and inventions? What problems/needs were being addressed? What's the difference between "invention" and "innovation"?

Once you've set the stage, it's time for kids to come up with their own ideas. Use some of the Idea Starters in the Inspiration & Advice section, and provide ample time for brainstorming, researching, observing, reflection and lots and lots of questions. To help kids identify a worthwhile project, urge them to think about *who* their invention will help, and to be not only great problem solvers, but great problem and need *finders*. Also, encourage research on what inventions are already out there. Does a solution already exist? Can they make it better? Remind them that many successful "inventions" are actually just an improvement or creative twist on an old idea. [Possible illustration here? / or quote about there being no truly original ideas.]

Feel free to choose a scope or context for kids to focus on, e.g., their classroom, school or local (or even global) community, but ultimately, allow kids to decide what problems and needs *they* want to address.



# What Makes a Good Problem-Finder?

The 2020 Inventor's Challenge is all about solving problems in your home, school or community, so we want to drive home the importance of **finding a good problem to solve**. A good problem is well-defined and -researched, is actually solve-able, and genuinely matters to the inventor.

Psychologists Jacob W. Getzels and Mihaly Csikszentmihalyi (known for his research on “flow” and its connection to happiness) studied problem-finding as part of their research on high achievers. They observed that scientists and artists who are giants in their fields tend to devote a lot more time and energy on **problem finding** over their less high-achieving peers.\*

So for this Inventor's Challenge, we encourage you to shine a light on the art of problem-finding, and encourage kids who are tackling the problems of the world to begin by taking a step back and asking, **“Am I solving the right problem?”**

## A Good Problem Finder:

- Is good at identifying what people need
- Asks lots of questions
- Reframes problems, rather than just solves the problem handed to them
- Looks at things from different angles and perspectives
- Is like a detective, noticing details that others may have missed
- Is curious about all kinds of things and can tap into lots of interests and knowledge across different subjects
- Notices connections and patterns
- Is empathetic and can step into others' shoes
- Is a good interviewer and listener
- Approaches things as “works-in-progress” rather than “absolutely finished”
- Is good at figuring out whether a task is possible or not
- Keeps going when others stop!

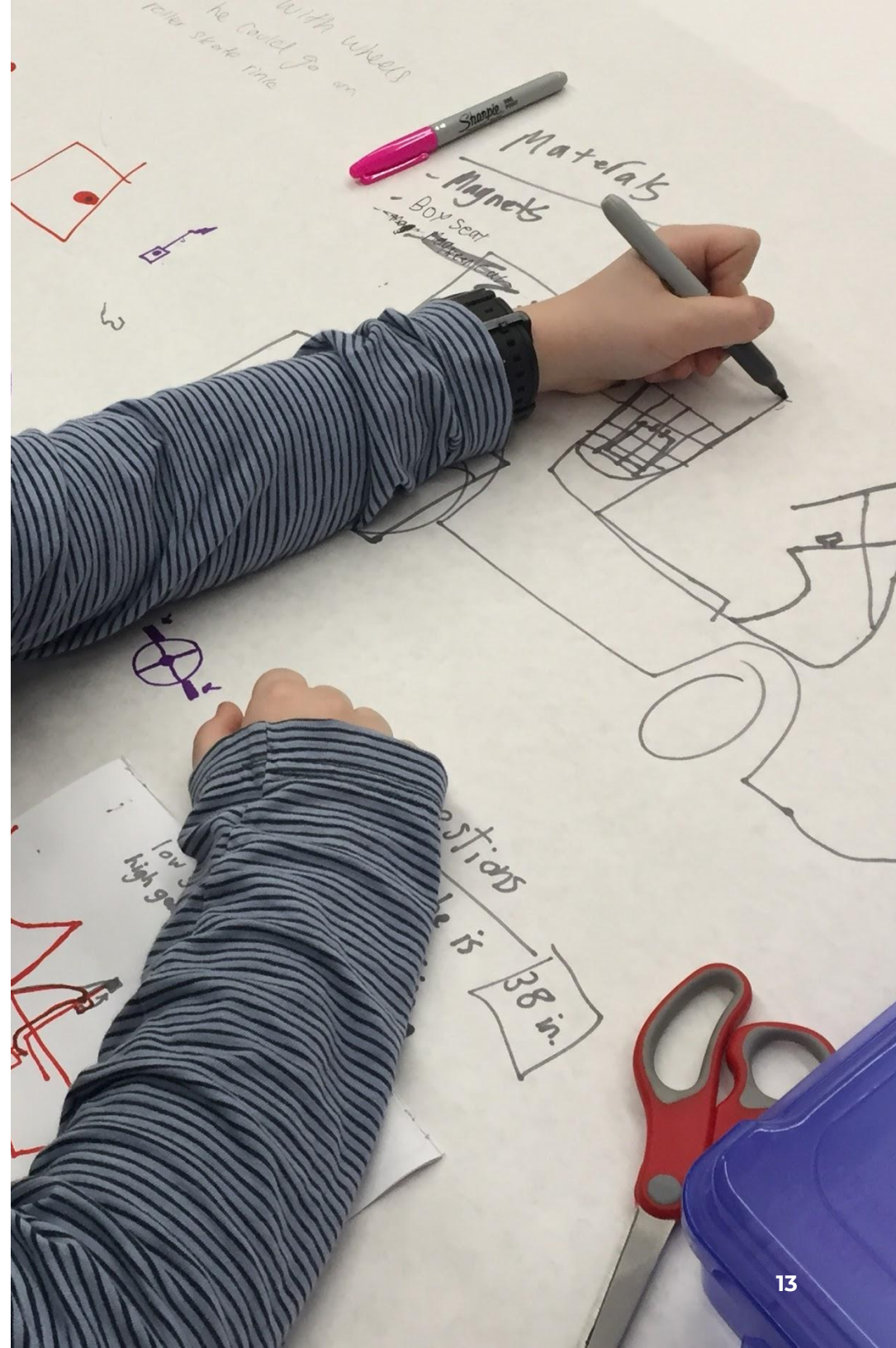
## Things to Try:

**Consider Existing Inventions** - Think of items people use every day — how did they get invented? How could a particular invention be made to work better? Kids can also bring items from home they think need to be improved.

**Explore the History of Inventions** - Research the history of different famous inventions, and share out any surprising discoveries. (This may turn into a “mythbusting” exercise as kids learn about how inventions like penicillin and Post-Its were originally “failures,” certain innovations were the results of accidents or mistakes, and that even though we often like to credit one person for inventing something, inventions are often the result of incremental innovations and various people working on the same problem simultaneously. Check out this [Atlantic article](#) and this [story](#) about a special car invented for a boy with Cerebral Palsy for some great examples and insights.)

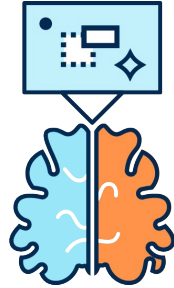
**Close Observation** - Find a site in the community, like a classroom or playground. Record how people use the space, and any difficulties they encounter. Remember, no idea is too small for innovation. Group up and discuss what they observed.

**Talk To Others** - Interview community members in order to discover everyday annoyances or problems they confront. Ask open-ended questions, and really listen to what the interviewee is saying.



# Imagine

**Think of new possibilities and explore wild ideas - the sky's the limit.**



Individually or in groups, have kids brainstorm different solutions to the problems they've chosen. This is a time to embrace weird and crazy ideas, and approach things with an attitude of optimism. Mix-and-match ideas for new and unexpected solutions. Have kids sketch out designs and jot down any notes and hypotheses about how their inventions will work. Reminder: this is a judgment-free zone – the goal is to generate lots and lots of ideas. Analysis and narrowing down of possibilities can happen *after* imaginations have had a chance to run free.



# Keep an Inventor's Journal and Document Your Process

We encourage all participants to keep an Inventor's Journal or Notebook to document and share their ideas, progress, and reflections. They can jot down inspirations, make notes and lists, sketch and draw designs, brainstorm potential invention names, etc. This not only helps with remembering passing ideas and building on them, but also allows kids to track the development of their idea, designs, and gain deeper insights from their successes and failures.

If the technology is available, participants can capture photos, audio or video of the process as well, and share updates on a blog, website or via social media. The important thing is that participants are actively documenting their process and creating a rich record of learning.

## Things to Try:

**Use A Common Tool In A New Way** - Let go of functional fixation – an object does not have to only be used in the way it was intended. To warm-up, have kids think of 100 different ways to use a \_\_\_\_\_. Go!

**Be A Lifehacker** - To get everyone in an inventor's mindset, have kids research "Lifehacks" and share favorite discoveries with the group. Follow up with having each individual come up with their own "lifehack" using common household or classroom objects.

**Imagination Starters** - Have kids draw up a list of helpful phrases to use during brainstorming. E.g., "What if we...?" "Would would happen if we..." "Let's try..." Post prominently around the room and encourage their use.

**S.C.A.M.P.E.R.** - A popular creative thinking tool used for sparking ideas. When you're stuck during the invention process, just ask yourself, what can I "substitute, combine, adapt, modify, put to another use, eliminate and reverse." [For a deeper dive, visit: [Link](#)]





# Build

## Just build it.



Time to choose an idea and make it real. Kids can write out a detailed plan or jump right in and “just build it.” Either way, allow time for kids to consider and gather the materials and tools they’ll need. Create, construct, measure, and cut – and recognize constraints that pop up. An idea that seems brilliant on paper may not work in practice. For the Inventor’s Challenge, kids will likely begin by building a model or prototype, just as inventors, architects, designers, and engineers do in the real world. By building a prototype – often at a smaller scale and with cheaper materials – they’ll test their ideas before committing lots of time and expensive resources to the final product.



## Things to Try:

**Reverse Engineer** - To understand how something works, it can be helpful to apply some reverse engineering. Have a Take Apart Day and take apart (and put back together or repurpose) toys, appliances clothing, anything that may help you figure out how to build your own invention. Check out the Exploratorium's Tinkering Studio [excellent guide to conducting a Toy Take Apart](#) session.

**Review Tools or Invite An Expert** - Make sure kids are familiar with the tools and equipment they'll need use to complete their inventions. Invite experts from the community to offer demonstrations and tips.

**Add Constraints** - Challenge kids with additional constraints. Can your invention be less expensive, lighter, more stable, more sustainable, able to withstand rain or wind, etc.? (Make sure kids document the their experiments and outcomes in their Inventor's Journals.)

**Build Your Team** - As kids develop your invention, they may discover that the solution is more complicated than originally thought. Encourage kids to ask for help and find teammates who can complement their strengths.



# Play

**Tinker and test creations within an environment of playful experimentation.**



Creations are rarely — if ever — perfect the first time around. Try things out. Iterate. Encourage kids to test out their inventions and invite others (especially those their invention is intended to help) to do the same. During this phase, kids should gather feedback, observe how others engage with their invention, note what works and what doesn't, and keep an eye out for surprising insights. Make adjustments and improvements. Be willing to pivot if necessary. Play. Tinker. Refine. Repeat.



## Things to Try:

**Progress Report** - Mid-way through a build session, give kids time to demonstrate or check out each other's creations and offer each other suggestions for improvements. Encourage them to highlight what they like and where they see room for improvement, and give feedback that is "specific, helpful and kind."

**Austin's Butterfly** - An [illuminating video](#) on the power of constructive feedback and multiple revisions. Show this to kids and discuss before conducting a gallery walk or sharing progress on inventions.

**No Instructions** - A variation on the gallery walk. Kids walk around checking out each other's inventions and must guess their function without any further information or instruction. They may ask yes/no questions. The inventor should observe and take notes.

**Note:** Kids should be jotting down any insights or takeaways that they may want to explore in their next tinkering session.



# Share

**Share what you've made in a meaningful public context. Tell your story. Let your work affect and inspire others.**



A public “demonstration” of the invention is critical to the Creative Play process and serves as the capstone experience to the Inventor’s Challenge. This allows kids to test their ideas, collect another round of helpful feedback, and perhaps drum up additional support and resources, beyond the confines of home or the classroom.

Kids should be able to talk about – and show – how their inventions work, discuss what benefits their inventions provide to others, and what features differentiate their product or service from those that are already out there. Why should people *care* about their invention? How will it make somebody’s life better?

The “share” stage launches a critical next phase of the Inventor’s Journey, one that puts an inventor’s storytelling and persuasive powers to the test.



## Things to Try:

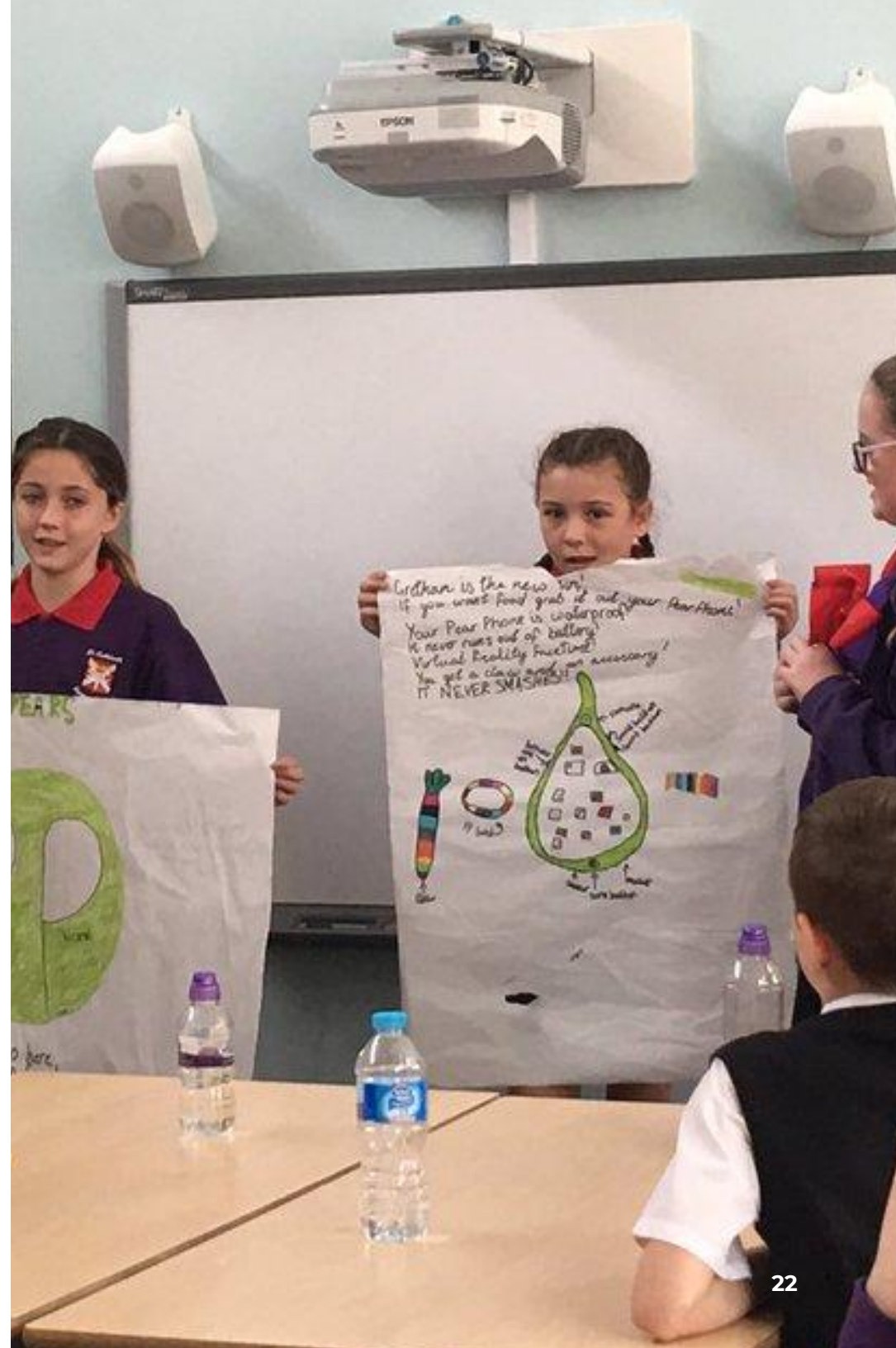
**Inventor's Challenge Video** - Share your inventions with the world! Check out the Video Guidelines on pg. 41 and don't forget to have kids upload their videos by January 15th, 2021.

**30-Second Elevator Pitch** - Craft an elevator pitch for your invention. In 30 seconds or less, can you genuinely spark somebody's interest in your invention and convince them that they (or others) need it? Write a pitch, refine it, then practice, practice, practice!

**Inventor's Fair** - It's time to get feedback from a wider audience. By now, the kids have already tested and refined their inventions in the classroom or workshop. Host an Inventor's Fair, and invite friends, family, and members of the community to try out their inventions. Kids should be prepared to demonstrate their inventions, discuss critical features, field questions, observe how attendees interact with their products, and solicit feedback (to incorporate into their next round of refinements or, down the road, for market insights).

**Kickstarter.com** - If an invention seems like it could be a hit with the masses, consider launching a Kickstarter project! Have kids explore the website for inspiration and check out their handy [Creator Handbook](#) for thoughtful tips on how to tell one's story and launch a product/project.

**Connect** - Share your inventions with the world! Post your videos and photos online using the hashtags #InventorsChallenge and #ATTImpact and don't forget to tag us @imagination @TwoBitCircusOrg @ATTImpact



*“To invent, you need a good imagination and a pile of junk.”*

- Thomas A. Edison



# Inspiration & Advice

In this section, we've included a few idea starters to get the ball rolling. We've also invited a few friends of imagination.org to share tips for creating an environment ripe for innovation and creativity, and how-to's for a successful Inventor's Challenge.



# Idea Starters

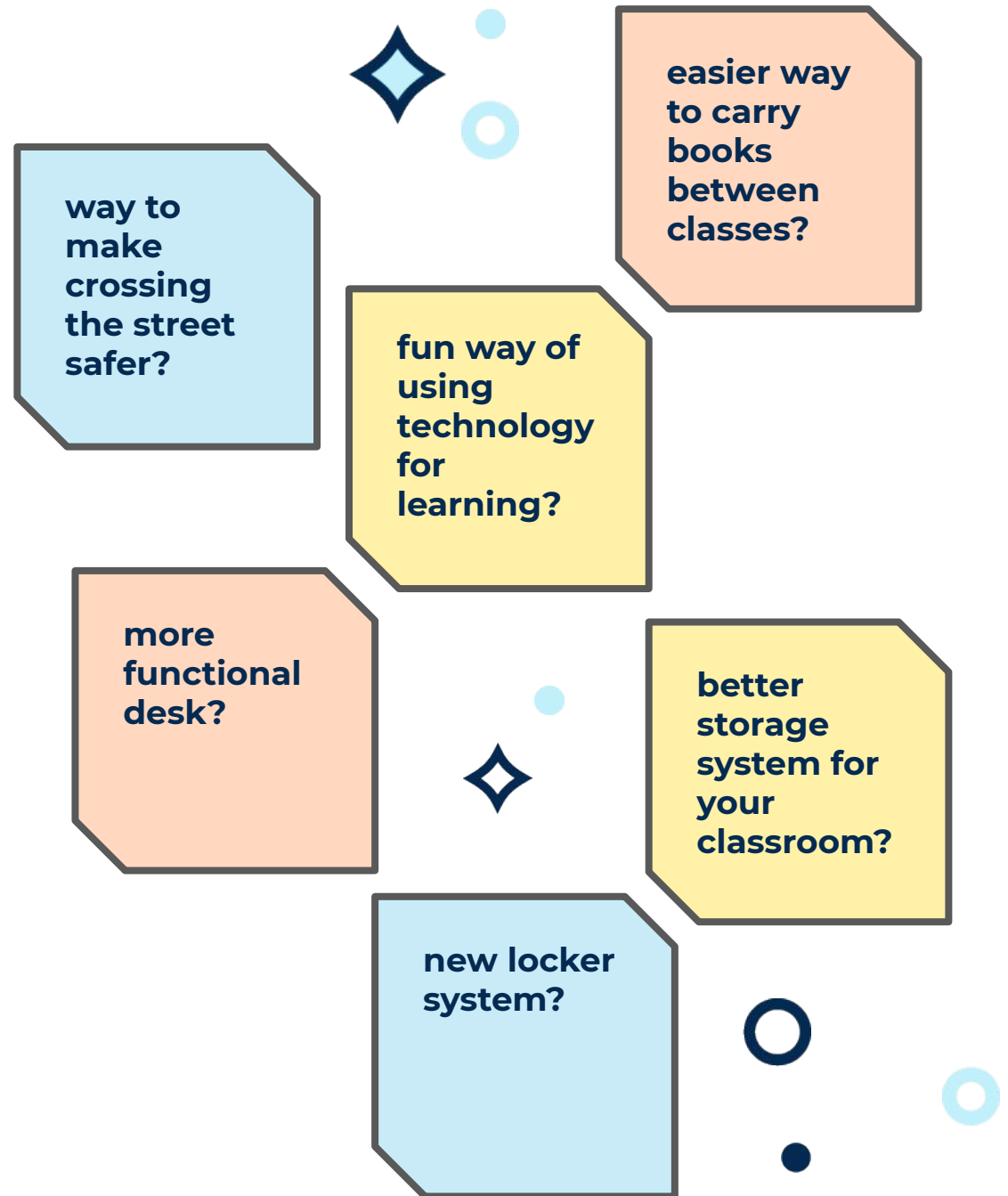
These ideas are meant to get kids creative wheels turning, but they are only a starting point. Participants should ultimately choose a project that is meaningful to them.

Can you invent a...

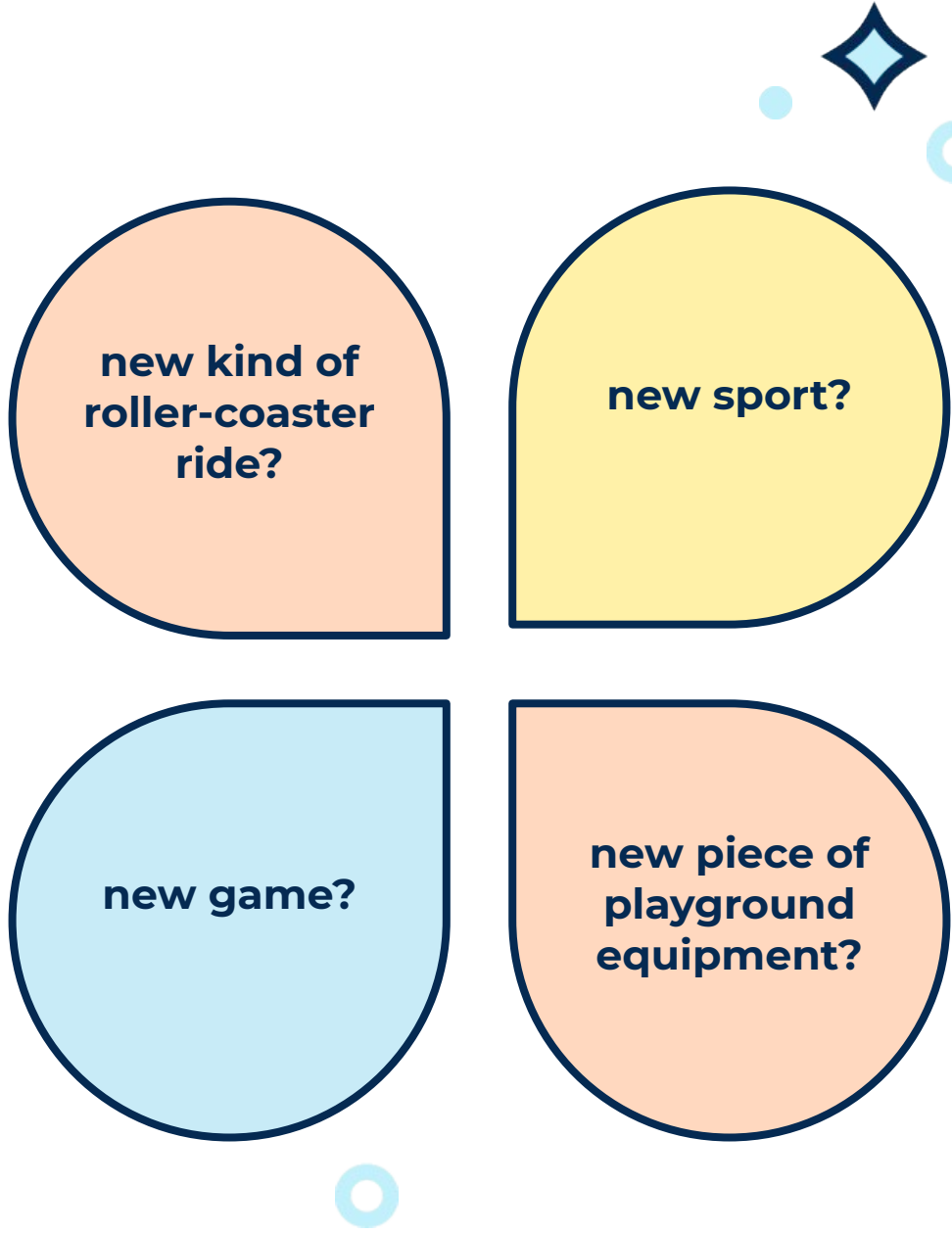


# Inventions to help your school

Can you invent a...



# Inventions to Help People Be Happier



**new kind of roller-coaster ride?**

**new sport?**

**new game?**

**new piece of playground equipment?**

Can you invent a...

# Inventions to Improve Your Life

Can you invent a...



## **Inventor's Challenge In Focus: Student Group Spotlight**

# **The Group Behind Stria**

## **Tackling The Challenge of Blindness**

In 2018, Stria was selected as a winner in the Inventor's Challenge Video Contest. They were awarded The Grace Hopper Incubator Prize of \$1,000 to further develop their idea from Imagination.org.

"Stria is a student-run startup devoted to help face the challenges of visual impairment. Straying from straight paths is one of the largest dangers of visual impairment, especially at crosswalks and sidewalks. Stria's mission is to empower and improve the lives of blind and visually impaired individuals in Northern California and beyond by harnessing the power of design engineering."

Stria has the capability to change lives, by alleviating daily stress and danger. The response from the blind community about our device has been overwhelming and motivating. Jimmy, one of our first users said in an interview, "I used to walk to my local grocery store and barber shop, which were three blocks away from my house. I want to be independent, but as a blind person I can't walk a straight line and doctors say veering can't be fixed." Now, he reports wearing the belt every day, and it helped him avoid accidents. Success stories like these continue to motivate us to move forward."

***Noah shares how Stria got its start and plans for the future.***



**"Stria has the capability to change lives, by alleviating daily stress and danger."**

- *Noah Tavares*

**Location:**  
**San Mateo, California**

**Participants:**  
**Students ages 15-17**

**Topics:**  
**Empathy & Invention**

**Host:**  
**Noah Tavares**  
**Founder, Stria Labs**

## Who Does Stria Serve?

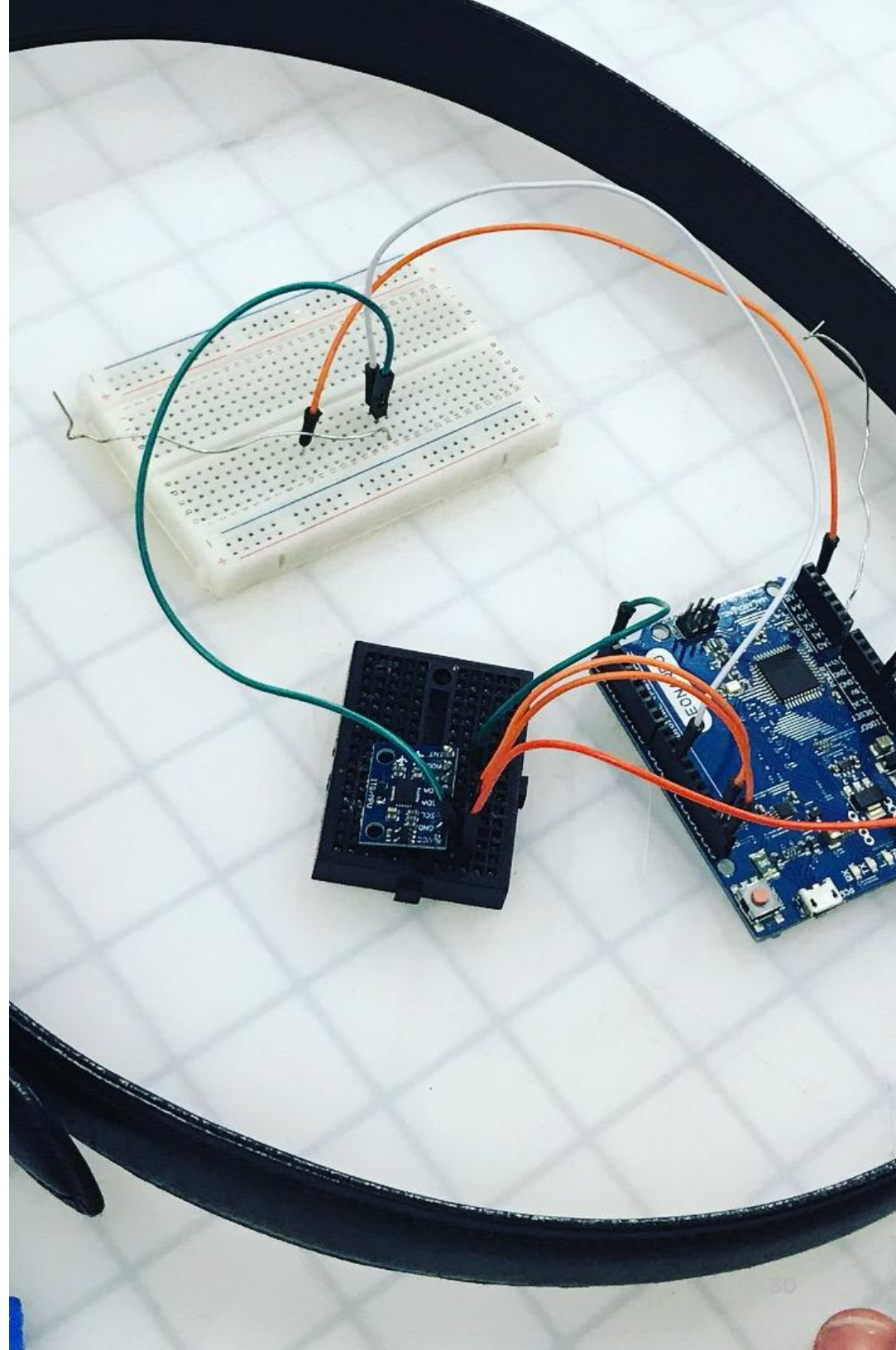
“Right now the World Health Organization reports there are 285 million visually impaired people in the world and Dr. Christopher Kallie finds that they all have “variability in stepping direction”. In tangible terms, when blind people try to cross the street they veer into traffic and can get hit by vehicles.”

## How does Stria solve the problem?

“Stria means “a linear mark” and that is what our device provides. It uses proprietary models to analyze how walking happens and when veering occurs. The user wears a belt with two vibration motors (one on each side) with a computer chip, battery and sensor positioned near the back. The natural placement of the belt allows the user to feel very little weight and it places little strain on the users body. Once the user starts to veer vibration occurs on the same side as the veering direction, alerting the user that they are dangerously veering.”

## Stria's Technology & Patent Protection

“In 2018, we submitted our patent application which protects our physical system and software implementation. Since our technology is so groundbreaking the best way to protect our development was to file a utility patent.”



## **Inventor's Challenge In Focus: Imagination Chapter Leader Spotlight**

# **IGB International School**

## **Highlighting the Inventor's Journey**

In the suburbs of Kuala Lumpur, Malaysia, Aga Chojnacka, a mother of two, and a veteran educator joined as an Imagination Chapter to inspire local youth to become lifelong learners. Her chapter of 250 students meet two times a week in their Makerspace and hold weekly events to host local Burmese refugees where they embrace the school motto, "Igniting Minds, Impacting Lives". When asked where her inspiration comes from Aga says, "The children are my inspiration, their unlimited creativity and imagination". The children are likewise inspired by Aga and her dedication to empowering students to learn by taking part in discovery and play.

For the Inventor's Challenge this year IGB International School's entire campus will take part in designing solutions on how to make their school campus a more sustainable place. Students will use their Makerspace to help them explore ideas as they arise. Aga notes "The one nonnegotiable at our Makerspace during Inventor's Challenge is the Design Cycle", the children are given 7 weeks to follow the Design Cycle to ideate, prototype, test, and elicit community feedback. Aga's role during this challenge is to document and support students through the cycle, but most of the time she views herself as a self proclaimed 'maker cheerleader'. One of the most common questions she gets asked is "...help me cut this huge piece of cardboard".

## **Aga shares tips to spark inspiration in her students.**



***"The children are my inspiration, their unlimited creativity and imagination"***

- Aga Chojnacka

**Location:**  
**Kuala Lumpur, Malaysia**

**Participants:**  
**Students ages 4-16**

**Topics:**  
**Empathy & Invention**

**Host:**  
**Aga Chojnacka, Primary Years Programme Coordinator, IGB International School**

## Inspiration Comes From Many Sources

“Our goal is not to put that original creativity out but only ignite it further, hence the school motto: Igniting minds, impacting lives. I also find picture books and nature a great source of inspiration. We try to go treasure hunting (for wood, leaves and rocks) as often as possible.

Very often we will open our session with a good picture book (some of our favorites include *Rosie Revere an Engineer*, *What do you do with an Idea?*, *Extra Yarn*, *It's Not A Box*). We've been adding books that inspire self-efficacy and maker mindset to our collection both at school and home.”

## How Does Your Group Identify The Problem?

“Last year the problems came from the children and we had 20 teams working (around 80 children directly involved). This year we have a whole campus problem, which is how to make our school a greener( more sustainable place).”





**SPOTLIGHT #1**

# Gizmo CDA Makerspace

## Creating an Environment that Fosters Creativity

Gizmo CDA is home to one of Imagination.org's nearly 150 Imagination Chapters and is made up of a merry cohort of twelve 8-13 year-old local homeschool students. At Gizmo, kids discover – and develop – their strengths and interests via stations set up throughout the space, adults model the behavior they want to see, and everyone is encouraged to “follow their nose.” Different learning styles are acknowledged, and thrive here. “All I want to do is give [my kids] a vehicle or a way that allows them to understand how they process something, and they’ll be successful,” says co-founder, Barbara Mueller. Below, Barbara shares a couple principles/best practices to ensure an environment that’s ripe for creativity.

***Barb shares a couple of other principles/best practices to ensure an environment that’s ripe for creativity.***



*“I am a former master weaver turned engineer. My husband and I started started a makerspace 35 years ago and opened it up to the community ~ 3/1/2 yrs ago”*

- Barbara Mueller

**Location:**  
Coeur d’Alene, ID

**Participants:**  
Homeschoolers, ages 8-13

**Topics:**  
Empathy & Invention

**Host:**  
Barbara Mueller, Makerspace  
Co-founder

## Be A Kid Again

Want kids to approach things with a sense of play? Don't play the authority, just be playful. Barb explains, "Kids come to us and they've been judged a lot...We expect them to be curious but have to understand that curiosity is not often valued in the classroom...they feel inadequate because they're not instantaneously loose and thinking in a wild and crazy way. In second grade, they're ok; in 5th grade, it starts changing. So I'm just child-like with them so they can get back to that place." She gives the example of when the kids were building cloud lamps with LED lights and cotton batting. "I want them to be playful in imagining, so I just start doing it. As they're building, I become a child, too. I'll look at what they're making and say something like, 'That reminds me of a dog' or whatever, and then let them start talking about what they're seeing."

## The True Meaning of F.A.I.L.

"People invite us to speak to their classrooms and they introduce and detail all our successes - that we've won Academy Awards, we've built cameras that live on the International Space Station or at the bottom of the sea. But what they never say to the kids is how long it took us to get there. So we'll ask the kids, 'How long do you think it took us to build the camera that ended up on the Space Station?' They'll guess: 'A month.' And they're floored when we tell them it took a year and five iterations. Then we write 'F.A.I.L.' on the board and explain how for us it just means, 'First Attempt In Learning.' And from that point on, 'fail' means something totally different to them. They look up to you and can now see that you didn't succeed in the first try!"



# Gizmo's Inventor's Challenge How-To

For the 2017 Inventor's Challenge, a group of twelve homeschoolers spent seven weeks working to build a remote controlled car for a five-year-old boy with cerebral palsy. Barbara shares her steps for a successful Inventor's Challenge.

## **Introduce various possibilities for the challenge -**

Last year, we chose the theme of purposeful engineering. Even though this may change, it's helpful to provide a starting point.

## **Brainstorm and choose an idea with the kids -**

This helps the kids get personally invested in the process. Have lots of sticky notes and dots available. Once lots of ideas are on the board, group the ideas and have kids put dots on the ideas that they like best. Choose an idea. Make sure the idea addresses an actual need. This will help sustain kids' interest as they develop their invention over the weeks.

**Divide the project up into teams** - Allow kids to choose based on their own natural interest. Emphasize that there will be lots of cross-team communication.

## **Discuss skills and info needed, and next steps.**

- What they need to know to complete the project?
- Who can they talk with to find out if their idea fits the need? In our case last year, it was observation about the boy they were building the car for. Kids interviewed him about his body and mind and what was a motivator for him. We also spent a day where the kids had to type/cook/walk around blindfolded or with a cane, or with hands tied to experience some of the challenges somebody with a disability might encounter.
- Who has knowledge and skills to be able to help the kids do the project? Guide the skill development. We invited occupational therapists to speak to the class and to answer questions. They provided context but never handed the kids solutions.

**SPOTLIGHT #2**

# Allisonville Elementary 5th Grade Classroom

## Making the World More Awesome

Steve Auslander's 5th graders at Allisonville Elementary in Indianapolis, IN, have been part of the Imagination Chapter program since 2014. In their first year, their motto was "Create to make the world more awesome," and that ethos has stuck around. Auslander infuses a spirit of fun and play in his classroom, emphasizing real-world connections - both local and global - and embracing digital tools.

His school is BYOD (Bring Your Own Device) and his kids regularly connect with local organizations and Skype with classrooms and Imagination Chapters around the world. Steve shares a few other principles/best practices to ensure a classroom that's ripe for creativity.

## This is HOW you do it

Since digital tools are such a big part of Steve's classroom, he makes sure that kids feel empowered to use them from the start. "I spend the first two weeks of school, really hitting home:

1. This is how you use the technology and tools...green screen, iMovie, etc.
2. Logistics - the places that are available and when they're available (when rooms are empty, when hallways aren't noisy, etc.)

"We focus on how how how and then they don't need me. They're empowered to record themselves." What practical know-how do your kids need? Spend time teaching them to use the tools they need, then set them loose.



*"I'm a 5th grade teacher who loves connecting to experts and kids all over the world, and encouraging my students to create in order to show what they've learned."*

- Steve Auslander

**Location**  
Indianapolis, IN

**Participants**  
5th Grade Students, Ages  
10-11

**Topics**  
Empathy & Invention

**Host**  
Steve Auslander, 5th Grade  
Teacher

## How Could This Be Better?

“Anytime the kids create something, we always come to the carpet and I’m really positive, but we always say, ‘That was great. Now how could we make that better?’ We talk about how we’re 5th graders, not Universal Studios and it’s okay if the videos aren’t good...but the kids try see where things can be better.” Auslander admits that early in the year, the videos are a bit rough around the edges, “...but by May, they’re really good – the kid have learned how to use iMovie, how to edit things, they understand the need for a stand to keep things level, how to use a green screen...That’s sort of my method: Letting the kids be creative, experimenting, and gradually they get better and better.”

## When Opportunity Knocks, Answer!

“Sometimes you have to put something out there and not expect anything, but when there’s an opportunity, go with it.” Two years ago, a student invented a pencil holder called ‘the Supergrabber’. With the help of enthusiastic classmates, what started out as a plain masking tape prototype evolved into a sturdy, colorful holder that attached via magnets.

“A Chapter Leader in Italy, [after Auslander posted about it] said ‘Whoa, we wish we could get some of those Supergrabbers.’ And when someone says that, I follow up. One thing led to another and we ended up shipping them a class set. We had an assembly line, the kids would do quality control (they would throw out more than they’d put in the box). Finally they had 25 perfect Supergrabbers. We mailed them, and the kids sent us a video thanking us. My kids loved that: seeing kids in Italy using their invention.”



## How They Did It

The Allisonville Imagination Chapter has participated in the Inventor's Challenge two years in a row. In their tech-savvy classroom, inventing and video-making both take center stage during the Inventor's Challenge. Below, Steve shares his steps for a successful Inventor's Challenge in the classroom:

**Get kids excited about the Inventor's Challenge** - I kicked off by sharing about the Challenge, what it was all about, how there were prizes and how people all over the world were going to be sharing and posting their inventions.

**Brainstorm and talk to others** - We start with the question of 'WHAT BUGS YOU?' and try to come up with something that can really help other people. I tell my kids: "If something bugs you, it probably bothers others as well. And if it bothers lots of people, you're a millionaire."

**Gather Resources** - Once my students have their ideas, I give them time to gather resources and materials. I talk to their parents as well.

**Build Day!** - I kicked off by sharing about the Challenge, what it was all about, how there were prizes and how people all over the world were going to be sharing and posting their inventions.

**Share Your Work and Get/Give Feedback** - Have kids take a break from building to give updates and feedback. Try to stop with enough time to share and clean up, and keep the atmosphere positive. In the last 15 minutes, my kids can come up to the front of the room to discuss what they had planned, what they've done and what they could do better.

**Build and Refine** - I give my kids a little time for finishing touches, but that can be a little at a time.

**Make Your Videos** - I give the kids a chunk of time for video creation, too. Come up with guidelines, and make sure they write a script!..The most fun thing for my kids is the video-making, the advertising.

**Tip:** Kids LOVE green screens. And it doesn't have to be expensive. A green tablecloth will do the trick. Read this [Ed Surge article](#) for more green screen tips.

**SPOTLIGHT #3**

# Alex Knoll

## You're Never Too Young, A Young Inventor with a Big Heart

Alex Knoll's journey with the [Ability App](#) began when he was nine years old, when he noticed a man in a wheelchair struggling to open a door. He wondered if there was a resource that could have helped the man find out which stores in the area had automatic doors? After doing some research, Alex decided to create his own. He initially developed his idea into an app through the Invent Idaho competition at his school, and later won "Best Of Show" in the state of Idaho.

Since then, he has won multiple competitions, including the Inventor's Challenge in 2016, [shared his invention on the Ellen Show](#), met with Tim Cook from Apple, and regularly speaks to groups about his experience (or more specific topics - check with Alex). He has 500 "Ability Ambassadors" – and counting, who will go around and collect the data for his app, and is busy putting together a team to develop the app and drumming up funding to bring his app to the world. Learn more about his incredible journey here. On the next page, Alex shares some advice for young inventors, and provides a glimpse into the process of developing his app.



*"I'm developing an app that will help people with disabilities navigate public spaces, find safe and reliable services and employment opportunities. I love drawing, art and design, helping people and making the world a better place."*

- Alex Knoll

**Location:**  
Post Falls, ID

**Age:** 12

**Topics:**  
Changemaker,  
Entrepreneurship,  
Perseverance, Optimism

**Featured Inventor:**  
Alex Knoll, App Developer

## How He Did It

**Inspiration** - I have learned that most inventions come from a moment of inspiration. My moment of inspiration came when I saw a man in a wheelchair struggling to open a manual door, and I decided I wanted to help

**Research** - After I identified a problem I did some research to look into the problem further. I wanted to see if anything had been invented to help with the problem I had identified.

**Brainstorming/Researching a Solution** - I went out and interviewed people that were affected by the problem I identified. I asked them about what they would like to see in my app that would help them lead better lives

**Identifying A Solution** - I began to build the basic framework of my app.

**Refining My Solution** - I took all of the ideas for my app and simplified them all down into a refined product.

**Building A Business Plan** - Now that my product was ready I needed a business plan to bring my invention to market.)

**Creating A Pitch Deck For Potential Investors**- My invention required funding to be able to bring it to market. I created a pitch deck for potential investors to get involved with my project. A pitch deck is like a story that tells potential investors about your idea and how you plan to bring it to the marketplace.

**Finalizing Your Business Plan** - I took all of the ideas for my app and simplified them all down into a refined product.

**Bringing Final Product to Market** - As you can see coming up with a great invention is just the first step in a larger process of bringing your idea to life. It may seem like a lot of work, but if you enjoy what you're doing it won't seem like work at all.





# How To Join

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

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

# Suggested Materials

## Cardboard

- Used cardboard boxes
- Cereal boxes
- Shoeboxes

## Reused/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

## 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!)

## 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)

## 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

**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! :-)**

# Checklist

A handy checklist to help with planning.

## 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

If you want, host a showcase to celebrate all of your kids' inventions, and invite the wider community to come

## Before the Challenge

- Decide who will participate: small or large group?
- Register your challenge at [inventorschallenge.org](https://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., smartphone)
- Ensure you have an account set up on a video site like YouTube

## During the Challenge

- This Challenge begins on or after September 1, 2020
- 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](https://search.earth911.com)
- Share photos, video and stories online with #inventorschallenge & #ATTimpact
- Explore other chapters' invention videos

## 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.

**Only those who register can enter the contest.**



**Choose the invention you want to enter into the contest.**



**Shoot a short video demonstrating the invention's functionality.**



**Upload your video to YouTube and Fill out the form online at the URL below.**

The 2020 Inventor's Challenge runs from Wednesday, September 1 2020 - Friday, January 15 2021

**Enter the contest at [inventorschallenge.org/contest](https://inventorschallenge.org/contest)**

# Creating and Submitting Your Video

Here are instructions for how to create and submit a video for the contest portion of the Inventor's Challenge. All videos will be featured on Imagination.org's YouTube Channel!

- 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.
  - Take us through the steps of your own Inventor's Journey
- Register your challenge at [inventorschallenge.org](https://inventorschallenge.org)
- Choose one invention you want to showcase in each video
- Recommended length: 3 minutes or less
- Set the video in a quiet location with good lighting and a non-distracting background
- Mention Inventor's Challenge, Imagination.org and AT&T in your video
- Video must be your own original work
- Read the official, detailed rules here: <https://inventorschallenge.org/resources/>
- You will receive a link to a form to complete, IF you have registered at [inventorschallenge.org](https://inventorschallenge.org)

If you want, host a showcase to celebrate all of your kids' inventions, and invite the wider community to come

## A panel of Judges will use the following criteria:

All videos will be judged based on the following criteria: originality, level of inspiration and overall creativity. Judging will be conducted by a panel of Imagination.org and AT&T employees. The Panel will evaluate all valid entries and pick a winner for each category.

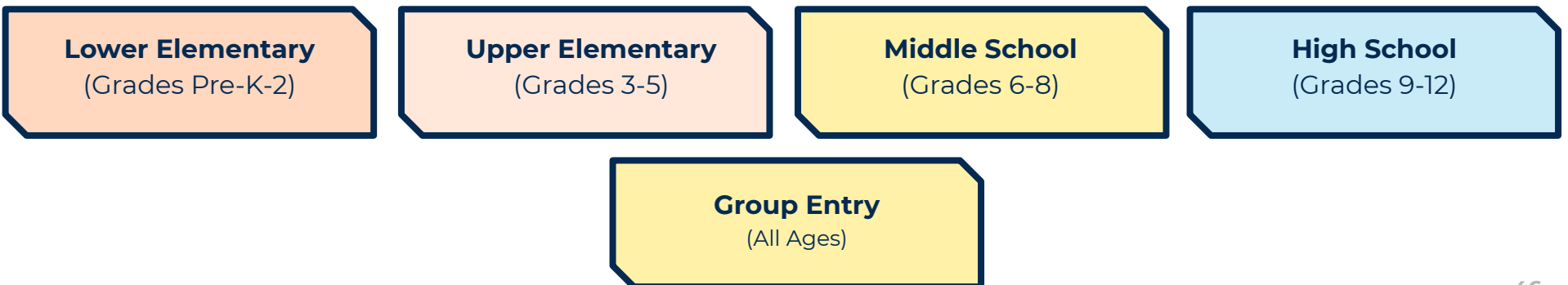
**Originality:** Entries must give an indication of being one-of-a-kind, new, fresh in some demonstrable way. They may draw inspiration or derive from objects that already exist; but they would be an iteration or improvement that is unique.

**Usefulness:** 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 & 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 Imagination.org and AT&T. The Panel will evaluate all valid entries and award one winner for each category.

### Contest Age Categories



# Individual Entry Prizes

**Thomas Edison Prize**  
(Grades Pre-K-2)

**Alexander Graham Bell Prize**  
(Grades 3-5)

**Nikola Tesla Prize**  
(Grades 6-8)

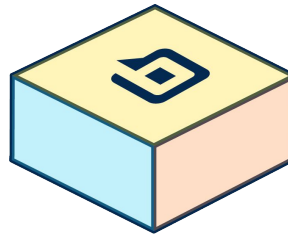
**Leonardo Da Vinci Prize**  
(Grades 9-12)

**One selected video from each Individual Entry Category will receive a prize package that includes a...**



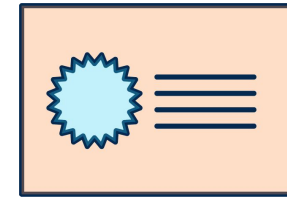
## Tablet

A digital device to assist in learning and inventing.



## BitsBox

A learning system that teaches kids real coding



## Certificate of Appreciation

An official certificate, courtesy of AT&T for your participation.

All videos will be judged based on: originality, level of inspiration and overall creativity. Judging will be conducted by a panel of Imagination.or, Two Bit Circus Foundation and AT&T employees. The Panel will evaluate all valid entries and pick a winner for each category.

Visit this link for all judging criteria and rules:  
<https://inventorchallenge.org/resources/>  
Good luck!

## Group Entry Prize

**The Grace Hopper Incubator Prize**  
(All Ages)

**One selected video from the Group Entry Category will receive a prize that includes a...**



### **\$1000 Grant**

A small grant to help fund your group invention.

All videos will be judged based on: originality, level of inspiration and overall creativity. Judging will be conducted by a panel of Imagination.org and AT&T employees. The Panel will evaluate all valid entries and pick a winner for each category.

Visit this link for all judging criteria and rules:  
<https://inventorschallenge.org/resources/>  
Good luck!



## Take that next step: patent your invention!

### Why should I apply for a patent?

Applying for a patent is an important final phase of the Inventor's Journey. Patents are important because they help protect your idea and ensure that no one else can use, make or sell your invention.

### Who can apply for a patent?

Anyone can apply for a patent. Young or old, as long as your invention is considered 'new and useful' by the United States Patent and Trademark Office, you may apply.

### How do I know if my invention will qualify?

Is your invention unique? Does it serve a need? Did your inventor's process require some unique innovation? If the answer to these questions is yes, then your invention may be patentable! Get started by conducting a [Google Patent Search](#).

### What if I'm not located in the U.S.?

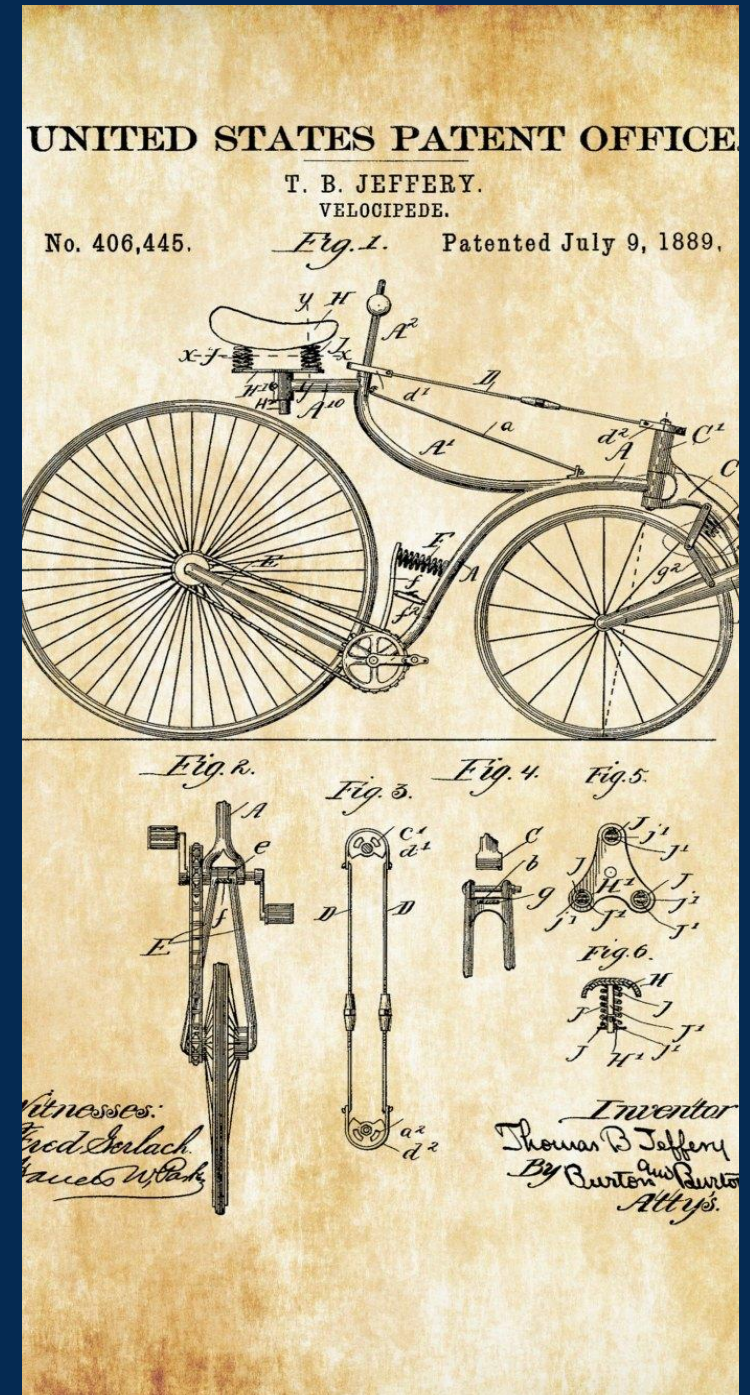
Visit WIPO, the [World Intellectual Property Office](#), an agency of the United Nations with 191 member states to learn more.

### Helpful Resources on Patents & Trademarks

- Links and tools for [students & educators](#) from the USPTO
- Our friends at Lemelson Foundation have put together some fantastic resources for inventors of all ages at their [Lemelson Center for the Study of Invention and Innovation](#)
- Here are [10 Patents that Launched Billion-Dollar Empires](#)
- Visit WIPO's online [library for young inventors](#)

### Other Resources to Help Spark Your Inner-Inventor

- [10 Women Inventors](#) everyone should know
- May is [National Inventors Month!](#)
- PBS Kids [Invent It, Build It Guide](#)
- 





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# Thank You!

Imagine the world we can build