



Oakland  
Schools

# GAME AND INVENTION

C H A L L E N G E



2023

Design Guide

# Game & Invention Challenge

Our mission is to inspire the next generation to use creativity, critical thinking, and STEM skills in the invention and innovation process and present these projects to a team of judges and peers for feedback and the opportunity be awarded prizes for their entries.

The Oakland County Game & Invention Challenge provides an opportunity for students in grades 1-12 to develop and pitch their original games and inventions to educational experts, industry professionals, members of the media and general public. This unique and educational experience ignites imagination, creativity and presentation skills like no other, providing a means of taking these inventions to greater heights, with professional critiques from industry experts.

Use this Design Guide to create your greatest invention!

It is not required to use the Design Guide, but it is recommended! The Design Guide is designed to help spur your creativity and give you tips on creating a thoughtful prototype and poster display.

# Project Checklist for the Game & Invention Challenge

- I have registered for the event
- I have paid my entry fee
- I have answered all of the questions in the Registration Portal
- I have had my parent/guardian read the permissions and they have electronically signed the agreement in the portal

## Poster Display

- Your Poster Display must contain:
  - Student Name
  - Project Name
  - Student Age and Grade
  - Student School
  - Brainstorming/Development: summarize the process you went through to develop your game/invention.
  - *Idea Testing*: Who did you test your game/invention with? What was their feedback? Did you make changes/adjustments based on this?
  - Rules or instructions for your game OR how your invention should be used
  - *Marketing Message*: to persuade your target audience about why they should buy your game/invention. You may want to create a slogan or consider listing the benefits and unique features of your invention.
  - Credits for people who helped you
- Your Prototype
- Your logbook so we can see how your ideas developed!

To see the complete event Rules and Regulations, as well as judging criteria, please go to

## Ever wonder how new games and toys get invented?

This guide will help you go through a design process, similar to what a professional inventor might do to create and pitch a new game or invention idea!

You will:

1. Brainstorm
2. Develop your idea
3. Build your prototype
4. Test your game or invention
5. Pitch it! - bring your Prototype, Poster to the event and be ready to Pitch your idea in person.

Grab a blank notebook, which will become your Log Book, and let's get started!

## Entry Categories

- Physical Games or Toys
- Digital Games
- Inventions

## Grade Levels

- Grades 1-4 (an experience instead of competition for this age group)
- Grades 5-8
- Grades 9-12

## Award Categories

- Most Marketable Game Concept
- Most Creative Concept (Grades 1-4)
- Most Outstanding Presentation
- Best Invention
- Best Solution for a problem that people experience

Other areas to think about:

- Craft/Activity Concepts
- Construction or Engineering Concepts
- Collectible Concepts

Keep these categories in mind as INSPIRATION when you are brainstorming and thinking of ideas for your game or invention!

## Invention

Invention is creating something new, something that doesn't exist yet. Invention is also taking something that does exist and making a BIG improvement on it. Often, invention happens when someone is trying to solve a problem or they wish there was a better way to do something.

### What is different about game and toy invention?

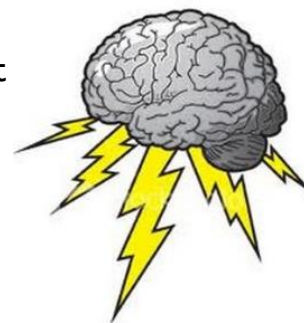
Unlike inventions for new equipment or household products that solve problems, the goal of game and toy invention is to create FUN! Something **new** that gets people's attention and brings them together to interact, laugh, and connect to each other through play. Here are a couple of links to information about invention you might find helpful:

- <https://www.youtube.com/watch?v=py9vMdwGEtg>
- <https://www.youtube.com/watch?v=k3OIHGNgRg&list=PLIB869899AB68219B>

Because it is sometimes challenging to come up with new ways to play ideas out of thin air, professional inventors often use techniques to come up with creative directions to explore. Here's a couple methods to try:

### Brainstorm!

The first step is Brainstorming... it's called *Brain Storming* because it is meant to get ideas pouring out of your mind as furiously as rain pours down out of thunder clouds in a huge storm! Brainstorming can be done by yourself, but is usually more fun to do in a group – with a couple of your classmates, friends or parents for instance.



### The 3 Rules of Brainstorming

#### 1. There are no **BAD** ideas...only **MORE** ideas.

In a Brainstorm, an idea is never judged or dismissed – it can only be saved or added onto.

#### 2. The “**YES! AND...**” Rule

The word “NO” is strictly forbidden from a Brainstorm! When you hear an idea from another person, you must always respond with the words “YES! And...” followed by a suggestion to add to the idea pile.

For example: Susan says “ what if we hid the Rubber Chickens and people gave singing hints? David responds “ YES! And... what if people had to sing louder the closer you got to the Rubber Chickens? Jerry responds “YES! And...what if the people had to use a chicken clucking sound after they sang?

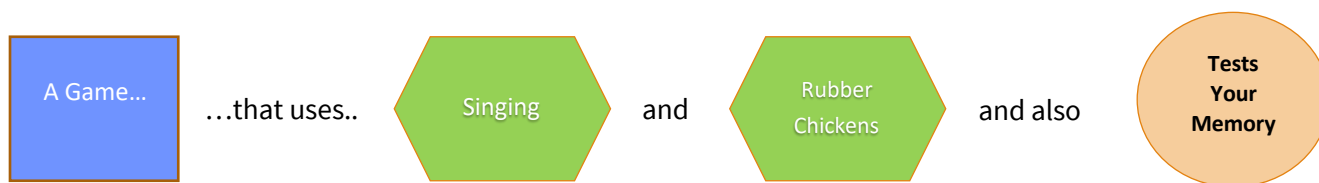
#### 3. **Write down EVERY IDEA.** No matter how ridiculous... in fact write it larger if it's especially ridiculous!

## Use Brainstorm Method #1 on the following page to warm up your brain!

This **Brainstorm Starter** uses a process called Lateral Thinking – because by trying to fit random attributes together it takes your brain “sideways” instead of in a straight logical line of thought.

Instructions:

1. Combine one blue rectangle item, with 2 green hexagon items, and then add one circle.
2. Write down the sentence you create in your Log Book. Example:



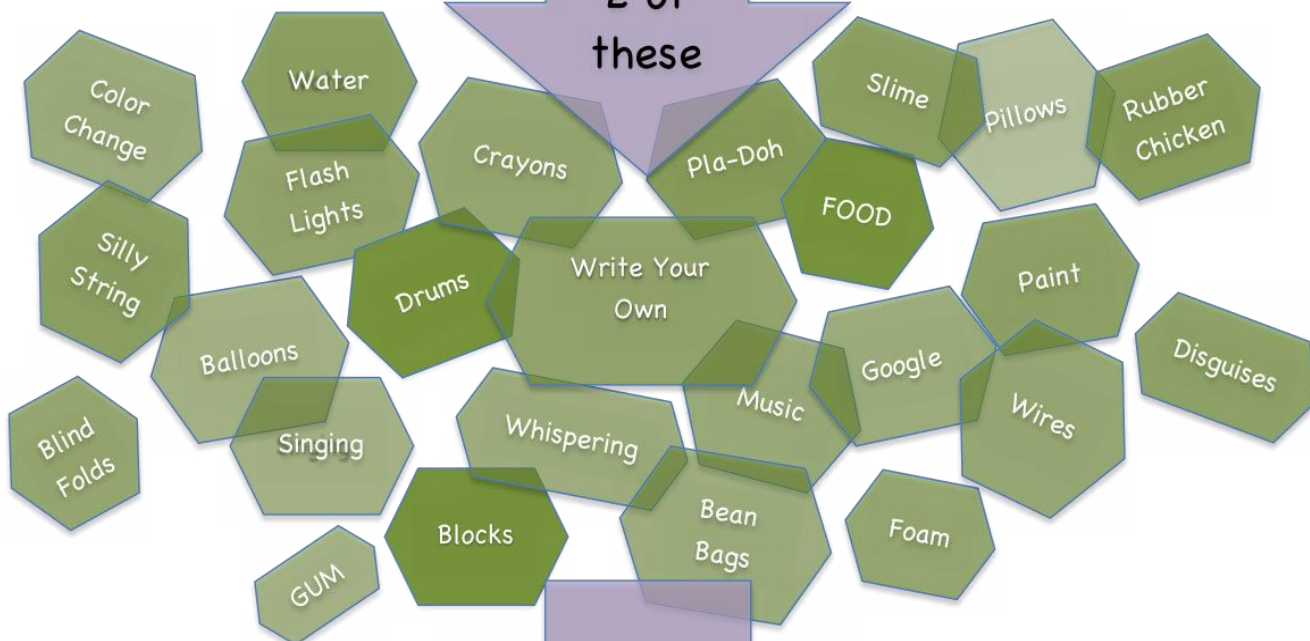
3. Make at least 10 of these silly sentences before you try to think of **any** solution
4. Now read the first sentence out loud and brainstorm for 3 minutes on whatever pops into your imagination. Write down all the ideas in your Log Book, no matter how silly, how serious or how impossible they may seem.

# BRAINSTORM STARTER

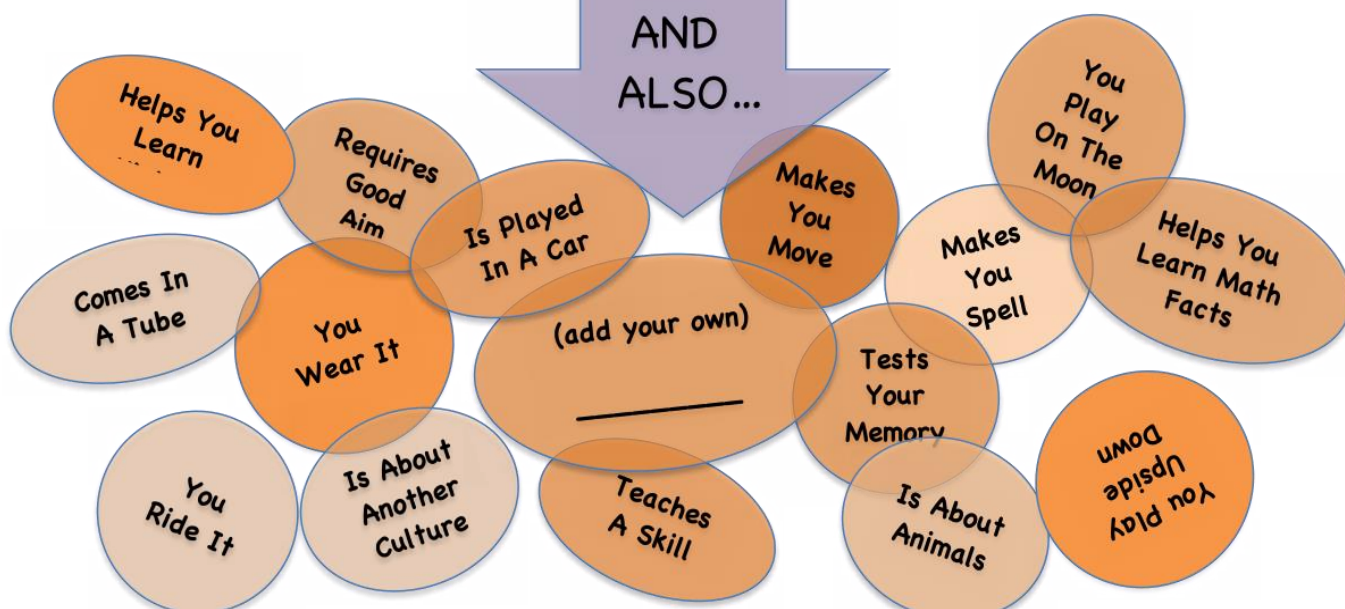
Pick 1 Rectangle +2 Hexagons +1 Oval and write it in your Log Book  
Imagine, discuss, and sketch your ideas quickly



That  
USES  
2 of  
these



AND  
ALSO...





## Brainstorm method # 2: Provocative Propositions

Provocative Propositions are a type of statement or challenge that makes us think about existing things from a brand new perspective. Try the same Brainstorm techniques using these to come up with more ideas for your Log Book.

1. **Opposite and Upside Down.** Choose a popular game. What if you turn it upside down or make it do the opposite of what it is supposed to do (for example, change Monopoly rules to try to lose the most money) Now use the “YES! And..” brainstorm process and write down the new ideas that pop out.
2. **Evolve It.** Starting with a game that already exists, brainstorm 5 ways it would change if you used different materials or by changing the form (EX: What if the cards were fabric or what if this flat board game was now a sphere?)
3. **The Worst Idea in the Universe**  
Try to come up with an idea so ridiculous or so impractical that no one would ever buy it. (Ex: A Bag of Broken Glass). Brainstorm “Yes! And...” . You may be surprised that a great idea may pop out of a ridiculous one.
4. **“I wish I could...”**  
Write down 5 things you wish you and your friends or family could do in real life. They could be fantasy –“ Living On Jupiter “ or more aspirational “ Saving the Polar Bears”. Write these into the Ovals on the Brainstorm Starter and make sentences that get your imagination in gear
5. **“I’ve always wanted to invent a...”**  
If there is a specific idea for a game or invention you have been wanting to invent then now is the time to write it down and Brainstorm about it! Just make sure to also try the brainstorm starter and other Provocative Propositions as well before you pick your idea.

## Picking Your Invention Direction

With so many ideas generated from Brainstorming, how do I pick which one to develop as my invention? Picking which of your incredible ideas to work on can be very challenging. To help with this important decision we are going to use a combination of intuition and analytics to narrow it down.

**Step 1:** Read through your Log Book and **circle your favorite 5 ideas**. Maybe you just love the name, a special feature, or the excitement you feel when you think about the idea. The ideas don't have to be fully thought through at all – that is the next phase. Think of it as just an **Invention direction** you want to explore further.

**Step 2:** Give each of your 5 ideas a rating using the I.D.E.A Rating System below. I=Innovative-ness, D= Desirability, E=Educate-a-bility, and A=Amazing-ness. Look at each of your 5 favorites and put 1,2, or 3 stars next to each one for EACH of the I.D.E.A rating categories.

### I.D.E.A Rating



<b>Innovative-ness</b>	I have seen an idea <b>SIMILAR</b> to this before but my idea is different	I have seen an idea <b>KIND OF LIKE THIS</b> before but my idea has a BIG difference	I have <b>NEVER SEEN ANYTHING</b> like this even when I Google it!
<b>Desire-a-bility</b>	I can imagine <b>SOME</b> people wanting to play/use this	I can imagine <b>A LOT</b> of people wanting to play/use this	I can imagine <b>EVERYONE</b> wanting to play/use this
<b>Educate-a-bility</b>	People <b>MAY LEARN</b> something	People <b>WILL LEARN</b> something	People <b>WILL EASILY LEARN</b> something important
<b>Amazing-ness</b>	I can imagine people <b>SMILING</b> when they play/use this	I can imagine people saying <b>“WOW!”</b> when they play/use this	I can imagine people being <b>COMPLETELY AMAZED</b> when they play/use this

**Step 3:** Now add the total stars next to each idea. Is there a clear winner? This will be the Invention Direction you will begin with. If you don't like the idea after you have developed it, you can always set it aside and try working on one of your other favorites, or come back and try brainstorming again to see if you get something even better!

## Develop your Idea

### **Name It!**

Now that you have picked your Invention Direction it's time to name it! Try to come up with 5 or 6 names that communicate the idea instantly, is fun to say, and is original. Write all the names you think of in your Log Book and find some friends to try them out on. When you settle on one you love, write it in GIANT LETTERS in your Log Book.

### **Invention Statement**

Now come up with one sentence that explains what it is. EX: "Green Destiny – the magical game that turns you into a house plant". You may need to write down several and try it out on friends and family before you find one that best describes your idea in one sentence. Once you decide, write it under your invention name. You may change this later but for now, this is your Invention Statement.

### **Development**

To start thinking about more details look at the questions below and write the answers in your Log Book. Remember to take lots of notes as you develop your idea. Be sure to write things down, draw sketches, and do anything that will help you remember how you came up with your idea and be able to explain that to others.

### **Showing your development work is an important part of the competition.**

Ask yourself these questions:

- Is this game/invention for younger kids, older kids, senior citizens, or all ages?
- Theme: Will this game be about something like Dogs or American History, or will it be without a theme at all like Chess or a Ball?
- Will it be played inside or outside? Standing up or sitting down?
- If this is played on a table, can you do a version that you hold
- What parts does it need?
- Describe how people play with it?
- How many people can play? Will it work better with more people or less people?
- When does it end? Do players have to reach a specific goal? Do they have to score a certain number of points or be the first to collect something?
- What will it be made out from? Wood, plastic, metal? Which parts?
- Do any of the parts move? How?
- How safe is it to play with?
- How big is it? What happens if you make it smaller or bigger?
- What colors do you imagine it being?

#### ***Did you know....***

*Jenga<sup>™</sup> was invented by Leslie Scott, who was born and raised in Africa.*



*The name "Jenga" is derived from a Swahili word meaning "to build".*

## Make your Prototype

A prototype is a model of your idea. It is the very first one of its kind! The goal of a prototype is to demonstrate what the toy or game will look and play like.

You want to be as complete as possible when making a prototype; but, sometimes what you want to create is outside of your skills or budget. You can use ANY MATERIAL to make your prototype that demonstrates your concept. You can even take apart other toys to use mechanisms or pieces that are hard to make yourself, as long as they are used in a new way. You can even use 3-D printing if you know how. Please make sure to give credit on your posterboard if you had help with any part of the development of your prototype.

Use your poster display and your log book to help describe the parts of your invention that you can't make. The most important part is being able to communicate your idea. What can't be done today might be possible tomorrow.

Remember, a prototype is not a final product. It doesn't need to be pretty or polished. It's good for the prototype to resemble the finished product as much as possible but you should avoid spending a lot of money on parts until you are more experienced as an inventor.

### ***Did you know...***

*The Super Soaker™ was invented by a NASA engineer named Lonnie Johnson.*



*The prototype used a common soda bottle for the pressure chamber.*

Image credit: Ben Baker/Redux

## STEP 1: INVENTION DIAGRAM

Draw a diagram sketch of your invention.

**This sketch should be included in your Log Book and on your poster display.**

- Draw the whole toy or game... think about what it looks like from the front, back, top...
- Draw arrows to the important parts with notes about what they are and how they are used.
- What are the important details?

Not everyone is a terrific artist or makes good diagrams. That's OK! The most important thing is for you to understand what you need, and tell/show others how it works.

## STEP 2: MATERIALS NEEDED

Now make a list of all the materials you will need. What physical parts do you need?

*For example:*

- 1 Sheet of Cardboard
- 4 dice
- 6 rubber chickens
- 1 can of slime
- 2 Pairs of sunglasses
- 3 small round mirrors
- 4 old car keys

Include this list in your Log Book and on your poster display.

## STEP 3: BUILD IT!

Gather your materials to assemble your first rough prototype to test out your idea. Its a good idea to spend time testing your game or toy before making a final prototype. It's not uncommon for a prototype to undergo several changes or even be rebuilt completely. You make changes based on feedback or comments received from the people that play with your invention to either improve on the things they like or remove things they don't like.

## STEP 4: RULES AND INSTRUCTIONS

You must write instructions and/or rules so people know how to use it. The instructions don't need to be long but they do need to be clear. Make sure to number your instructions.

Written instructions **MUST** be included as part of your entry in the Young Inventor Challenge

You can make your instructions part of your poster display or lay them on the table next to your prototype. Remember, people will read them! Make them using a computer or your best handwriting. Consider drawing illustrations or using photos to show how to play with it. Edit your written instructions for proper grammar and punctuation so people understand your instructions clearly.

Check out this video to see examples of prototypes/poster boards:

<https://vimeo.com/204351118>

## TEST Your Prototype

You must test your prototype. Gather your family and friends to help you test your game or invention. Play with it several times, then ask them to tell you what they think.

- Would they play with your invention again?
- What did they like the most?
- What didn't they like?

Don't get discouraged if you get negative comments. Just use that to make your invention even better! Ask them to be as specific as possible.

- Was it too long?
- Were the instructions clear?
- Was it difficult to use?
- What would they change?

You should also watch the players closely when they are using your prototype. What they do while playing could tell you as much... or more... than they will tell you by answering your questions.

[Write down any feedback you received in your Log Book.](#)

Use the comments and feedback to make changes to your game or invention. Play Test it again, and again, and again! Get testimonials from people who play your game or use your invention. A testimonial is a statement from someone about what they like and why. You can use these testimonials on your poster.

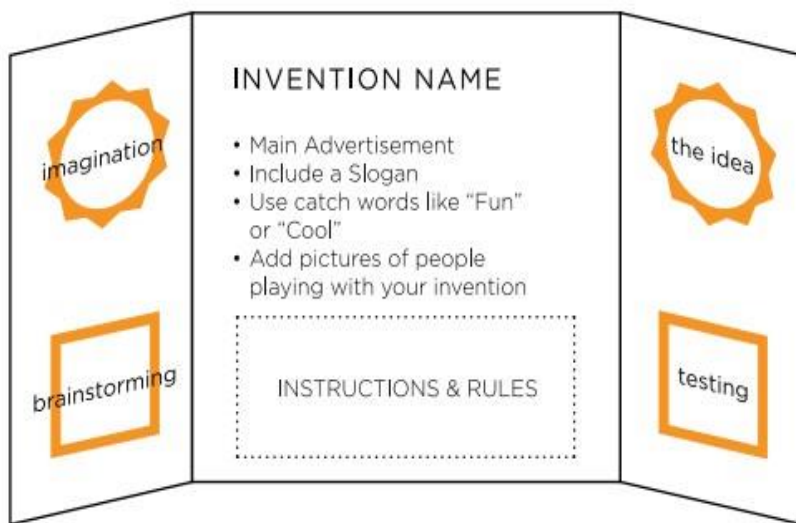
[Track your changes and modifications in your Log Book.](#)

Once you're satisfied with your toy or invention you're ready to put together your poster display! If you still need help coming up with ideas or putting together your prototype, check out some of the resources listed below.

## Make Your Poster Display

Check out this video to see examples of prototypes and poster boards: <https://vimeo.com/204351118>

Each entry is allotted a 60" wide x 24" deep space on a tabletop. All material must fit within this space including the prototype and poster display. It is recommended that a freestanding, tri-fold, heavy-duty poster board be used in much the same way you would at a science fair. There will be no walls to hang materials on. The poster display helps define the limits of your space.



This design is an example only. You may use your imagination and creativity to make your own display that:

- A) demonstrates the process you went through to invent your game or toy
- B) Contains a marketing message to persuade customers to buy your invention
- C) Include Rules and Instructions on the Poster or on the table

### Design Tips:

- Plan your display before gluing or taping anything. Draw a sketch on a piece of paper first.
- Use appropriate fonts. If you want it to look fun and creative, use a more unusual font with swirls or offset letters - just make sure it is readable.
- Use colored paper to create a background behind white materials.
- Think about including arrows or numbers to guide the reader through the sequence if it's complicated.
- Place your advertisement and/or slogan in a prominent position on your poster board.
- Pictures of people playing with your toy/invention can brighten up your display.