

What is Invent Iowa?

As one of the state's original Science, Technology, Engineering, and Math (STEM) programs, Invent Iowa is a comprehensive, statewide program developed to support educators in promoting the invention process as part of their regular kindergarten through high school curriculum. Invent Iowa was initiated in 1987 through the support of state political, business, and educational leaders in response to the future of rapidly expanding technology. Since 1999, the Invent Iowa program has been a part of the Belin-Blank Center. We promote the use of Invent Iowa curriculum in programming for whole classes, specific groups, or individuals.

<http://aalpkids.weebly.com/uploads/9/4/5/8/9458887/infopacket.pdf>

Components below taken from this document.

GUIDE TO INVENTING

Inventing takes time, so an overall framework of six to eight weeks would be ideal. This allows for idea incubation, experimentation and revision--all important steps in the inventing process. We encourage each student to come up with their own invention; however, pairs of students may work together on a project. Students, especially young ones, may unknowingly reinvent, the wheel, but that's all right--it's the process that is important. Older students should be **encouraged to keep detailed journals and do substantial product research** to determine if theirs is a new or novel idea. At the same time, by stressing and encouraging simplicity throughout the process, students will see inventing as fun instead of intimidating.

Having students keep detailed **logs** throughout the process, documenting the "who-did-what, when, where, and why" at every step, may be helpful as well.

Possible Steps to Inventing

1. Identify a problem, need, or new area of interest.
2. Start an inventor's journal and record all your ideas and steps along the way.
3. Identify possible solutions to the problem or need, or ways to address the area of interest.
 4. Evaluate each of the possible solutions.
 5. Re-design the solutions.
 6. Re-evaluate the possible solutions.
 7. Identify the best possible solution.
8. Research the solution to make sure it is unique.

Your Solution Becomes Your Invention

 9. Name your invention.
 10. Illustrate and explain your invention.
11. Make a model or prototype of your invention.
 12. Market your invention.

During your inventiveness unit try to help the students concentrate more on finding a real problem and solving it in a unique way, and less on how the finished product looks--after all, coming up with an original and useful idea is #1!

- Avoid saying it won't work. Help the student discover a solution.
- Remember where the ownership lies -- with the student (this isn't easy).
- Ask questions that may help the student clarify ideas and find alternatives.
- Encourage persistence and patience. That's the difference between a dreamer and an inventor.

What Can I Invent?

Sometimes it's hard to get started thinking about what you can invent. Below are some invention ideas from students just like you. They began by thinking about a real-life problem they had, and then tried to solve it. Maybe reading about them will help you get your "invention juices" flowing!

- Sixth-grader Anna Thompson's **Measure Quick Shortening Dispenser** makes her father's job as a pastry cook much easier.
- Fifth-grader Chris Robben's baby brother chewed on the germ ridden handles of shopping carts at the supermarket. So Chris cut a plastic shower-rod cover that fits over the shopping cart handle. He calls it the **Germ Buster**, Now his brother can chew to his heart's content, and not get sick.

- Jenny Horowitz sat at the corner of her dinner table where the table leg always got in her way. So the fifth-grader invented the **Special Corner Chair**. It has a groove cut in the seat so that Jenny can pull right up to the table leg and straddle it.
- Fourth grader Kristin Doherty invented the **Retractable Leash** for her dog's collar. When it's walk time, Kristin doesn't search for the leash, she just pulls it out of the collar.
- Sixth-grader Scott Burnett invented his **School Bus Early Warning System** so he can wait for the school bus inside his home when the weather is bad. Scott's invention picks up a signal from the bus on an FM radio while he sits safe and dry inside.
- Fourth grader Jennifer Acosta came up with a **Pop Top Mouthpiece**. Jennifer's reusable mouthpiece snaps into the slot where the top was pulled off a not-so-clean can and allows the user to drink without fear of germs.
- Mark Mueller was tired of soggy cereal. So the fourth-grader invented the **Cereal Plate** -- a bowl with an angled bottom that keeps the cereal and the milk separate until they are mixed together.
- Sixth grader Aaron Snyder wanted to be in full control when pushing his wheelbarrow down-hill. Now he is, because he invented the **Wheelbarrow Brake**.

Invention Ideas List

- A new kitchen utensil
 - A new way to turn pages in a book
 - A new way to help someone break a bad habit -- like nailbiting
 - A new way to keep dirt outside
 - A new way to water a houseplant
 - Something to keep your pet cool in the summer
 - A new way to prevent forest fires
 - A new musical instrument
 - A new game for children who have a certain disability -- like blindness
 - A new way to package food
 - A new way to send messages
 - A new way to make a job safer on the farm
 - A new piece of playground equipment
 - A new way to fasten things together
 - A new way for people to keep from getting lost in the woods
 - A better birdbath or birdfeeder
 - A new way to exercise your pet
 - Something to make a short or tall person's life easier
 - A new garden tool
 - A new product that absorbs liquids
 - A new way to move or pick up something that is very heavy
 - A new drawing or painting tool
 - A new way to recycle
 - Something that makes one of your chores easier to do
 - A new way to control pests
 - A new product that helps disabled people
- Now you come up with more invention ideas!

Your Log Or Journal

- Before you begin work on your invention, you need to decide how you are going to keep your inventor's notebook (we will call it your **Journal**). Keeping a journal is a

very important part of the invention process. Your journal can help you prove that you had the idea for this invention first.

- Inventors sometimes have to prove they were "first to invent" in order to receive a patent. As well, your journal can help you keep track of all your ideas, and it will help you organize all of the steps required to complete the invention process. Although your journal is a personal and creative diary of inventing, it will be helpful to you if you need to prepare an Official Inventor's Log for an Invention Convention; this process is similar to preparing a Patent Application for the United States Patent Office.

Some hints for keeping your inventor's journal:

- Make sure you use a large enough notebook for your log.
- Remember to write your ideas down often so you don't forget them.
- Don't leave out anything -- your failures are just as important as your successes when you are an inventor.
- Be sure to write in ink and do not erase.
- Your journal should include all of your ideas, problems with the ideas, possible solutions, drawings of possible solutions, results of interviews, results of surveys, tests, etc.
- Include all the books, places, other references and people you use as resources for your invention research.
- Write down what things your parents or other adults do for you during the project, and what work is your own.
- Make sketches and drawings to remind you of your ideas and make things clear to others. Try to make the drawings of your ideas as soon as they come to you -- so you don't forget!
- Include photos of your work along the way -- they are good proof of what you have invented.
- List all your costs and describe all the materials you use in making your invention.
- You can include receipts if you want.
- Have an adult sign and date your journal as a witness to prove that the work and the ideas are your own. Do this often during the invention process.

How Do I Research My Invention?

Invention:

Inventor(s):

Date the invention was patented:

Why was this invention needed?

How does the invention work?

Is the invention used today? If yes, how? If not, why?

- Research is gathering facts and information so that you can approach a subject with as much knowledge as possible. Doing research at several points in the inventing process will help you become a successful inventor.
- There are many people and resources waiting to help you get started on your invention research. One of the best places to start is at your school or local library. There you can read about inventors, how they solve problems, and how their ideas become inventions.
- Talk to your librarian or media specialist to see what special resources might be available to help you with your project. In addition to visiting your library, you can also start your own collection of models, magazines, and invention books.
- Another great way to get started is by visiting a nearby museum. There you will probably find examples of famous inventions on display. Museums of history or

science and technology are great sources of information on how inventions have changed our lives. Many even have working models to show you how things work.

- Talk to as many experts as you can in your field of interest. Try to find some inventors to talk to. Remember to ask your parents and teachers for help if you need it along the way.
- Once you think you have a new idea, research it carefully to see if your idea already exists. Check toy departments, hardware stores, catalogues, department stores, libraries, etc. You can also visit uspto.gov and uspto.gov/go/kids to see if your invention already exists. You may also do research to see how much your invention will cost to produce, and if your invention idea is marketable--that is, will people buy it?
- Whatever research you do, make sure to record your steps in your inventor's journal or log. Good luck!

Completing Your Invention & Building Your Model

Now that you have made a decision, you are ready to plan how you are going to complete your invention. By planning your steps you will save a lot of time and energy--and inventing will be lots more fun!

- Use your imagination to picture your invention in your mind. Draw your invention, labeling all the parts as best you can at this point. Later on you will need to draw a very neat and complete drawing of your invention in your journal, but for now a rough sketch will be fine.
- From the drawing you have made, you can now create either a model or a prototype of your invention. A model will represent your invention idea; a prototype will actually work. A model or prototype will make your invention idea more interesting and will show other people how it works.
- First you will need to decide what materials to use to create your model or prototype. Try to think of materials that are easy to find and use, relatively inexpensive, sturdy, and that will make your invention as attractive as it can be.
- List below all the materials you think you will need to make your model or prototype. This can be a list that grows and changes as you work on your model or prototype. Later this list can be transferred into your inventor's journal.
- Now you are ready to begin making your model or prototype. Be sure to ask an adult to help you with any parts that may be dangerous for you to do alone (like using an electric-powered saw to cut wood). Remember to record all of your steps in your journal or log.
- This part of the invention process may take you several hours, and you might not be pleased with your first try. That's OK -- inventors are the kind of people who never give up, and they don't let little problems stop them.

Naming Your Product

A lot of careful thought goes into selecting the name of a new product. Often it is a catchy name that makes the first few sales!

- Imagine you work in a company that has four new products on the market. Each one is briefly described below. You must think of a good name for each one. Brainstorm several names, and then circle the one that **YOU** like best.
- Pick one word/prefix/phrase from group A and one word/suffix/phrase from group B that seem to really "fit" your invention. Now put them together. Try saying them quickly, and then reverse the word order. Add other words and try several different combinations to see if you can come up something you like. Ask your friends what they think. Who knows? Your invention name may be right in front of your eyes!

| Group A | | Group B | |
|----------------|----------|----------------|--------|
| aqua | photo | master | away |
| travel | handi | izer | minder |
| thermo | micro | 2000 | n' go |
| medi | pet | meter | buster |
| elec | sleep | ator | a-tron |
| opti | auto | aid | ease |
| work | accu | saver | alarm |
| pest | compu | mate | - o |
| mega | safety | be-gone | feeder |
| baby | farmer's | max | glow |
| audio | quick | buddy | flex |
| E-Z | info | tote | freeze |
| presto | super | rider | shovel |
| tele | step | no-more | helper |
| all-in-one | pro | finder | sure |
| nite | cosy | shield | alert |
| kiddie | mini | pal | tech |

Add your own ideas to the groups above!

List below some of your favorite ideas for naming your invention. Then pick the one you like best!

INVENT IOWA RULES!!!

What Makes a Good Invention?

1. Is your problem significant?
2. Is your invention really a new idea?
3. Is your invention your own idea?
4. Does your invention satisfy the need or want you identified?
5. Is your invention workable?
6. Does your invention efficiently solve your problem?
7. Is your invention well built?
8. Are the benefits of your invention significant?
9. Do you have a complete journal or log that clearly describes every step you took in developing, researching, planning, drawing, and building your invention?
10. Does the drawing of your invention show:
 - o what your invention looks like?
 - o how it works?
 - o all the parts of your invention, with each part labeled?
11. Is your model or prototype well constructed?
12. Can you clearly describe the steps you used in thinking about and developing your invention?
13. Did people other than you only do work on your invention that was unsafe or too difficult for you to do?

Invent Iowa Rubric

Criteria for evaluation:

- the student has identified a need or want indicating an authentic issue to be addressed by the invention
- the student has demonstrated that his/her invention will successfully address this issue
- the student has demonstrated that his/her invention involves a creative, new idea
- the student's presentation and log reflect his/her own work and understanding of the invention process
- the invention design and model/prototype/diagram show appropriate use of materials, as well as evidence that the invention will work
- the quality of the invention and the supporting display reflect careful preparation by the student in support of his/her invention

How to Make Your Invention Display Board

Use foam core board, poster board, heavy cardboard, wood, pegboard, particle board, cork board, or other suitable material.

Make the display board free-standing. You can do this by cutting and taping three pieces of cardboard together, folding lighter-weight boards into thirds, or attaching some sort of reinforcement to the backs of heavier boards.

Make sure your display board fits easily into the space allowed for your invention convention and still allows plenty of room for your invention model or prototype.

Your display board should include the following sections:

- Title of your invention
- Problem
- Solution
- How it works
- Diagram of your invention with labels explaining parts
- Photos of invention in use
- Proof of Uniqueness (U.S. Patent and Trademark Office plus 3 related businesses)
- Benefits (EX: saves time, saves money, increases safety, improves health, assists physically challenged individuals, helps the environment, increases convenience, provides entertainment)
- Name(s) of inventors

Other things you might decide to include are:

- graphs, pictures, magazine and newspaper clippings that relate to your invention
- a jingle, song, or poem about your invention
- results of any surveys and/or research you did involving your invention

Make sure your display is neatly arranged and lettered -- press-on letters, stenciled letters, and computer signs work well.

Have fun with your display board -- let the artist in you show through!