

## Inventor in the Making!

**WebQuest Description:** An ELP Inventions Webquest. Designed by Emily Parakkal. [parakkale@waterlooschools.org](mailto:parakkale@waterlooschools.org)

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### Introduction

Have you ever imagined something you could create to make your life easier or better? If so, you may have the chance to bring this idea into our world and share it with others. If not, hang on for the ride! As of now, you are an inventor in the making! Sit back and enjoy!

### Tasks

Welcome to your journey as an inventor! We will be "walking in the footsteps" of real inventors and "traveling" through the stages real inventors move through to create something the world has never seen before! You will have the opportunity to: Identify real problems or needs in your life that you would like to solve. Discover the world of inventions that have been created to solve real problems or improve our lives. Exercise your imagination to create something truly new! Overcome obstacles that threaten to squelch your creativity and prevent you from actually producing your invention. Just like a real inventor!! cannot wait to see what you imagine and invent! Good luck!

### Process

You will be creating an invention that can be produced and sold, and that people can actually use. You will be presenting your invention at the Invention Convention to real judges who will be using this rubric. Step 1. Look at the rubric on the Evaluation page. This rubric will help you create an invention that has potential to truly be successful and functional in our community and world. Answer the following questions about your project on a piece of paper. Make sure you include your name, the date, and the subject of your paper (Inventions Project) at the heading of your paper. Use the Expert column of the rubric to answer these questions. Do you need to document the process you took to create your invention? If so, what need to be included in your description? Can your invention be similar to items that have already been created? Why do you think this is a requirement? To get full points, what needs to be true about your product idea? Should your invention be designed for your own personal use, or to be used by a real audience? How will you be sure your invention is interesting and appealing to your audience? What is the difference between a model and a prototype? How will you decide if you would like to create a prototype or a model? What needs to be true about your diagram?

&nbsp;&nbsp; Step 2. One important step in the invention process is keeping an Inventor's Log. This log is a spot for the inventor's ideas, process, problem-solving, and more. It is also a way to prove that he or she really came up with the idea (and it is not someone else's).&nbsp;&nbsp; Since you are an inventor in the making, you will be keeping an Inventor's Log starting now. In your log, write the following list of items you will need to include&nbsp;&nbsp; in your log: All of your ideas for inventions Your plans Problems you encounter Possible solutions to your problems Sketches and drawings of your ideas Materials needed and their costs Photos of your work along the way Interviews, surveys, results (shown on graphs) Failures and successes Special events&nbsp;  When you use your journal: Write in ink and do not erase or cross out. Why do you think it is better to write in ink rather than pencil? Write in your journal often! (at least every time you work on your invention) Give your family credit for what they do to help you. Sign and date your journal for every entry. Have an adult sign and date your journal as a witness to prove that the work and ideas are your own. Do this at least once per week. Number every page consecutively (in order). Don't leave space between your entries. Write on every page.&nbsp;  Step 3. How does an inventor protect his invention so others cannot steal his or her idea and make money off of it themselves? They need to obtain a patent. Your next step is to find out about patents. Visit the InventNow website.&nbsp;  You can also read about patents here. Read the entire page, and then click the Start button. Investigate the following questions and document them in your Inventor's Log. How is a patent like a gym locker? Which organization grants patents to people? What is a patent? Why would someone want to get a patent? Before you even invent something, you need to make sure it is original, or novel. Why spend all of your time inventing something, only to find out someone else has already created it? Write down the following website address. You can search patents to see if your idea is a new one: <http://patft.uspto.gov/netahtml/PTO/search-bool.html>&nbsp;  Step 4. Starting now, you have a new (and temporary) role: apprentice. An apprentice works under an expert in order to learn all they can about their profession. Since you are an inventor in the making, you will take some time to learn all you can from an inventor. Why did they create their invention? What were their strengths? Weaknesses? What process did they take to create their invention? Follow the following steps&nbsp;  for your "apprenticeship": 1. Choose an inventor to learn from. Make sure everyone in the class chooses a different inventor. Pick one of the following inventors and write who you choose in your Inventor's Log: Alexander Graham Bell Louis Braille Benjamin Franklin George Washington Carver Henry Ford George Eastman John Deere Leonardo Da Vinci Thomas Edison Samuel Morse Your choice (get inventor approved first from your teacher)!&nbsp;  2. Use the following websites to learn all you can about your inventor: Inventive Genius, Britannica Encyclopedia&nbsp;  (get the username and password from your teacher) Find out the following about your inventor, and document your discoveries in your Inventor's Log: \*When was he or she born? When did he or she die? What are some interesting facts about the early life of your inventor? What are some positive things that happened in his/her life? What were some negative

things? Pick one of your inventor's inventions to describe. Draw a picture of the invention. In your opinion, what is the greatest strength of this invention? Why did he or she invent this? Based on your research, what advice do you think your inventor would give to beginning inventors? Your final product will be a presentation in front of your classmates. You will act as your inventor and include information about "yourself." Your presentation will be evaluated based on the following criteria: You included all key points of your inventor's life; You used good speaking skills; You discussed the invention itself; You were knowledgeable about your inventor; Step 5. Why do people invent? Read the Inventor's Tool Kit. List in your Inventor's Log all of the reasons these people invented. Step 6. Let's practice the whole process together! You can choose if you would like to work alone or with a partner. Follow the following steps (taken directly from the Invent Iowa Curriculum Guide): Our problem is: Eggs are very fragile, and they often break during transport. Challenge: Invent something that will prevent an egg from breaking when it is dropped from an 8-foot ladder. Foundation: Because this is our challenge, what background do we need to know? (For our practice, you do not need to actually research. But when you create your own invention you will.) Data: Develop some questions about the invention in order to gather important information about the invention. Use the 5 W's and the H: Who; What; When; Where; Why; How? Imagination: Begin creating the invention. Think of possible solutions to keep the egg from breaking. Sketch these ideas and label them. List all the materials you will need and the cost for each. Remember that inventions continue to develop their thinking during the invention process. Your first idea should not be your last idea. Limitations: What are the possible disadvantages or drawbacks of your solutions? Change your sketches to solve some of these potential problems. Lastly, build your invention! When you finish, list these invention process steps in your Inventor's Log and write the definition of each in your own words. It's time to begin! Are you ready? Step 1. Help! I need some ideas! It is time for you to start brainstorming what you will invent! What problems or needs do you have? Read Is There Anything Left to Invent? What Can I Invent? and Inventions Ideas List at this site. You can also find ideas at InventNow.org or the Invention Convention Video. Then begin to brainstorm problems or needs that you have in your Inventor's Log. Step 2. Follow the steps in the invention process (listed below). Before you decide on your invention, use the following checklist to see if it will work (taken directly from [http://www.education.uiowa.edu/belinblank/Students/inventia/K-8\\_Guide/BuildModel.aspx](http://www.education.uiowa.edu/belinblank/Students/inventia/K-8_Guide/BuildModel.aspx)): Identify a problem or need you have. Start a journal to document all of your ideas and the steps you take along the way. Brainstorm possible solutions to the problem or need you thought of. Evaluate each of these possible solutions. What are the potential drawbacks of each (see below)? Re-design your solutions. Change them to make them better and overcome the possible obstacles. Evaluate these new designs (like #4). Identify the best solution. Will it work? Will people want to use it? Research your chosen solution to make sure it is unique. Search the patent website, Google, stores that may have something like it, etc. If it is truly unique and meets all of the criteria for an excellent invention, then this solution will be your invention! Name your invention. Illustrate and explain your invention. Make a model or prototype of your invention. Produce and advertise your invention. Problem & Solution #1-2-3 Is my idea really new? Is your invention your own idea? Is my idea interesting? Is my idea practical? Is it as simple as possible? Is it safe? Does your invention satisfy the need or want you identified? Will it be helpful to me or to others? Is it usable? Will it really work? Can I make a model of it with materials that are available? Can it actually be constructed? Will people really use my invention? (survey friends, family and neighbors to see!) Will most people who can use my invention be able to afford to buy it? Is my idea clearly described by a neatly constructed and easy-to-read poster? Do I have a complete journal or log that clearly describes every step I took in coming up with, researching, planning, drawing, building, and displaying my invention? Does the drawing of my invention show: What my invention looks like? How it works? All the parts of my invention, with each part labeled? Is my model or prototype: As well constructed as I can make it? A size that fits in the space allowed for in the convention rules? Can I clearly describe the steps I used in thinking about and developing my invention? Did people other than me only do work on my invention that was unsafe or too difficult for me to do? Have fun! Good luck! \* All questions taken from the Invent Iowa Curriculum Guide..

## Evaluation

This evaluation is taken from the Invent Iowa Curriculum Guide, written by the Belin-Blank Center for Gifted Education and Talent Development. Expert Inventor; Skillful Inventor; Amateur Inventor; Beginner Inventor. Points: Is the invention entry diagram presented professionally? Elaborate and attractive diagram with all parts clearly labeled and explained 5; An attractive diagram with all parts labeled 4; Diagram with most parts labeled 3; A simple drawing of the invention 2; A highly-detailed and comprehensive representation/ working replica of the invention 5; A comprehensive representation/ working replica of the invention 4; An adequate representation/ working replica of the invention 3; A simplified representation/ working replica of the invention 2; Is the Inventor's Log thorough and complete? A well-developed description of the invention process. 5; A description containing the highlights of the invention process 4; Brief statement of the invention idea and the solution 3; A partial description of the invention 2; Is the Inventor's oral presentation thorough and complete? Communicates a high level of knowledge and understanding of the process 5; Communicates some knowledge and understanding of the process leading to the invention 4; Describes the invention idea and the solution 3; Briefly describes the invention 2; Does the invention involve a novel idea? A significant level of difference between this invention and prior products 5; A substantial level of difference between this invention and prior products 4; Some simple differences between this invention and prior products 3; Very similar to prior products 2; Is the invention a fresh or unexpected idea? Unique and exciting product ideas 5; Very interesting product ideas 4; Attractive but predictable ideas 3; Traditional product ideas 2; Is the invention workable? Clear and convincing evidence that this invention will work effectively 5; Sufficient evidence that this invention will work effectively 4; Minimal evidence that this invention will work effectively 3; Little evidence that this invention will work effectively 2; Is the invention appropriate for the stated need or idea? A clear and convincing connection between the problem or idea and the invention 5; Sufficient evidence of a connection between the problem or idea and the invention 4; Minimal evidence of a connection between the problem or idea and the invention 3; Little evidence of a connection between the problem or idea and the invention 2; Does the invention have strong interest and appeal to intended audience? Professional in appearance and well-suited to the intended audiences 5; Attractive and useful for the intended audiences 4; Useful to some people in the intended audiences 3; Idea might have potential interest and appeal 2; Is the invention well-crafted and complete? Clear and convincing evidence that materials and construction are the best for

the invention; Sufficient evidence that materials and construction are the best for the invention; Minimal evidence that materials and construction are the best for the invention; Little evidence that materials and construction are the best for the invention; 5; 50; 40; 30; 20; /50

| Category and Score  | Expert Inventor   | Skillful Inventor  | Amateur Inventor  | Beginner Inventor  | Score |
|---|---|--|---|--|-------|
| Is the invention entry diagram presented professionally?  | Elaborate and attractive diagram with all parts clearly labeled and explained                     | An attractive diagram with all parts labeled   | Diagram with most parts labeled                             | A simple drawing of the invention                            | 5     |
| Is the invention entry model a clear idea representation?<br>or<br>Is the invention entry prototype an exact replica? | A highly-detailed comprehensive representation/working replica of the invention                   | A comprehensive representation/working replica of the invention                        | An adequate representation/working replica of the invention | A simplified representation/working replica of the invention | 5     |
| Is the inventor's log thorough and complete?  | A well-developed description of the invention process   | A description containing the highlights of the invention process                       | Brief statement of the invention idea and solution          | A partial description of the invention                       | 5     |
| Is the inventor's oral presentation thorough and complete?  | Communicates a high level of knowledge and understanding of the process leading to this invention | Communicates some knowledge and understanding of the process leading to this invention | Describes the invention idea and the solution               | Briefly describes the invention                              | 5     |
|   |   |  |   | Total Score  | 20    |

## Conclusion

The conclusion of your invention experience is yet to be determined. You will be attending the Invention Convention to share your invention with judges and other students from our city! Judges from the community will evaluate your invention according to the rubric (on the Evaluation page). Good luck! Know that, whatever the outcome, I am proud of you! Way to use your imagination, effort, collaboration, and problem-solving skills! You have grown and learned real skills that will help you for the rest of your life! Way to go! If you'd like to continue your invention adventures, create inventions at the inventor's workshop!

## Teacher Page

This is an Inventions WebQuest created to be used with elementary talented and gifted students. To complete the entire process, it will take students about 20 - 30 hours. Before using the WebQuest, my class engaged in creativity (fluency, flexibility, elaboration, and originality) exercises to get them warmed-up and thinking. S.C.A.M.P.E.R. is a great activity to use with students to introduce them to inventing.

### Standards

The standards used for this WebQuest, from the Iowa Core curriculum, grades 3-5 are:

Behavioral Sciences:

Understand the changing nature of society.

Social Studies:

Understand the role of innovation on the development and interaction of societies.

21st Century Skills:

Communicate and work productively with others, emphasizing collaboration and cultural awareness to produce quality work.

Adjust to various roles and responsibilities and understand the need to be flexible to change.

Practice leadership skills and demonstrate integrity, ethical behavior, and social responsibility in all activities.

Demonstrate initiative, creativity, self-direction, and entrepreneurial thinking to produce successful outcomes.

Use technology resources to create original products, identify patterns and problems, make predictions, and propose solutions.

Use technological resources to develop and refine questions for investigation.

### Credits

I used many of the ideas, and the rubric, from the Invent Iowa Curriculum Guide, written by the Belin-Blank Center for Gifted Education and Talent Development (authors are Clar Baldus, Catherine Blandos, Laurie Croft, and Catherine M. Hirsch), Copyright 2005.

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### Other