The Engineering Design Process

Define the problem. What do you notice? What issues do you see? You should answer all of these questions to help you come up with an idea.

- What do you care about that could be better?
- Who do you care about who needs help?
- What problems do you see that need to be fixed?
- What difference could you make in your home? Community? World? School?
- What is broken and needs to be fixed?

Hard landings on skateboards can cause falls scrapes scars, and board breaks. An [illegible] board is a risk for these injuries. I think skateboards can be modified to prevent d[illegible]. Modifying skateboards can help [illegible] the world so no serious injuries happen to them. I like the idea of adding a thin rubber band around the wheels to prevent slip

Problem statement-This is how you have to write your problem statement.

- **What** is the problem or need?
- **Who** has the problem or need?
- **Why** is it important to solve?

The format for writing a problem statement uses your answers to the questions and follows these guidelines:

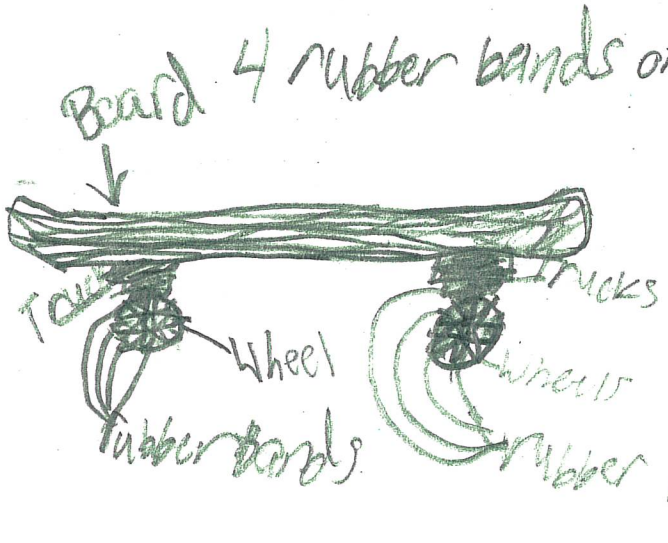
Who need(s) **what** because **why**

skaters need(s) less slippery skateboards because then they can land more tricks and prevent injuries.

Describe your problem in detail. What is it? How is it caused? Where does it happen? Who does it affect? What is the negative impact?

My problem is when skaters go for tricks they can fall, scar themselves, and board breaks. My project is stay on by a few rubber bands on the wheels of the board. So it won't slip while doing tricks. This problem is caused by landing hard or miss-set placement. This problem can happen anywhere around the world. this problem affects skaters all over the world. the negative impact on this project is you will not be able to move with the rubber bands on.

Pictures and descriptions of:



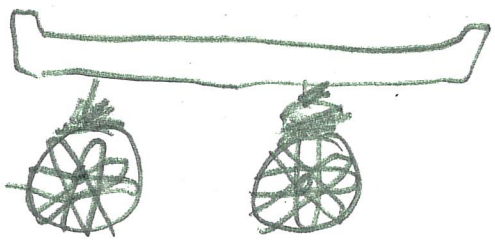
Describe what has been done to try to solve the problem. Has anyone already tried to solve the problem? Why doesn't it work, or could it work better? What products/solutions may already fill a similar need?

something that been done to try to solve the problem is straps connected onto the board and then strapped on your feet. People have tried to solve the problem with a square piece of rubber that fits around the wheels. It could work better but they made it a little loose so the wheels roll around and it doesn't stop the problem but it moves a lot while doing tricks. Skate trainers have stop

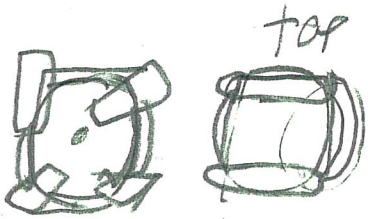
website
•SkaterTrainer www.skatertrainer.com

Pictures and descriptions of:

Mine



other



Research- You need to research all of these things for each of your ideas. Keep track of all the websites you visit while doing your research.

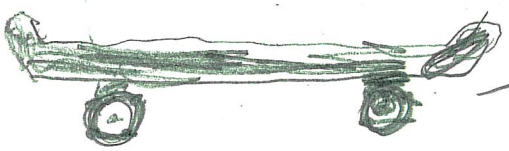
- Research to find out what type of people might be interested in using your design.
- Research consumers/customers who would be interested in purchasing your design.
- Research to see if there are any existing solutions

Answer the following questions

- Google the competitors… Who else sells something similar to what you want to make?
- How much does it cost? Could you do it cheaper?
- ***You really want to explore other similar products/items and discover how YOURS will be better.***
- Why did you choose this in the first place?
- What was it that bugged you that made you want to improve it?
- How will you improve it?

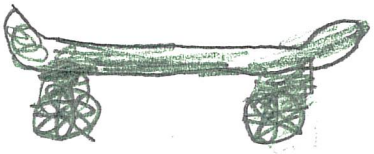
People who might be interested with using my design are skaters. People who would be interested by buying my design are new skaters. I've seen that there are existing [illegible] but I will make mine cheaper. A website called 'Skater trainer' sells some things similar to what I want to make. This product costs 9.99 on their website but I will make mine 4.99. I had chose this design because I am new to skating and want to learn tricks. What stood me [illegible] for trainers and I will make them cheaper. I would improve it by firstly making it cheaper than it would make it out of different materials.

Possible solutions for your idea



1 layer of the rubber sheet.

Rubber (The whole strip



Rubber bands

What materials will you need to create your design/prototype?

I would need rubber and plastic. I would need rubber bands and cardboard but I need more material.

Design Execution: Step-by-Step directions. You need to be as detailed as possible. Step 1, step 2, step 3, step 4, etc.... Someone else should be able to read your steps and put together your prototype.

To start make rubber ~~wo~~ and ~~make~~ ~~sure~~ they are the same length. Then make the width how you want it to be thick or skinny. Then run it along vertically on the wheel. Glue on the end of the rubber sheet then keep going. Next glue the other end to the sheet. Now you will need 4 strips of the rubber sheets for all of the wheels. Finally wait for them to dry and put it on the wheels.

Criteria are requirements you specify that will be used to make decisions about how to evaluate the product. Criteria defines the product's physical and functional characteristics and must be declared as a measurable quantity. For example, you could use the following criteria for a prototype. How sturdy is it? How fast does it accomplish the end result? How easy is it to use? Then you grade your project based on the criteria and give it a score for each one.

Test 1

Ollie Rubber bands Shuv-its Manuel !

Criteria How are you going to grade your prototype?	**3** How are you rating the performance?	**2**	**1**
durability	3	0	6
size	0	0	0
Performance	3	1	1

Prototype Notes:

The rubber bands did not stay on the wheels and some had broken. The rubber bands were not good and their performance was so bad. I would not recommend these and just use normals.

1 layer of the strip.

Test 2 ollie shuv-it manuel

Criteria How are going to grade your prototype?	**3** How are you rating the performance?	**2**	**1**
durability	8	5	10
size	7	7	9
performance	8	4	10

Prototype Notes:

For this test I only used 1 layer of the bigger sheets. The layer was mostly good except for the shuv-its. The ollie was great and the manuel was the best. For the shuv-its it wasn't as good because the strip kept breaking and falling off the wheel.

Full long strip

ollie shuvit manuel

Test 3

Criteria How are going to grade your prototype?	**3** How are you rating the performance?	**2**	**1**
durability	7	6	10
size	10	9	10
performance	9	3	10

Prototype Notes:

These rubber sheets are very easy to make and work very good. These make a difference with your performance a lot. These trainers also let you land more tricks like an ollie or manuel. If you do shuv-its they won't work as good since they slip off.

Constraints are factors that limit the project. Some typical constraints are cost, time, and knowledge; legal issues; natural factors such as climate, and raw materials; and where the product will be used.

What are the constraints for your project?

The constraints for my project is the cost, time, and knowledge. Something else could be raw materials and the product could be used outside or inside.

Reflection:

Reflect on your prototype. What went well? What challenges did you face? What would you keep in your design and what would you change to improve it?

something that went well was my 2nd and 3rd prototype. What challenges I faced was mix time and money. What I would keep is the rubber sheet and what I would change is to probably include more sheets.

Conclusion:

How did the limitations of your design affect your outcome? Could your prototype impact a society or the world? What lessons did you learn?

The limitations affected my outcome because I had limited supplies like glue and rubber. My prototype could impact the world. A lesson I learned making Silgate trainers teaches you that safe practices builds essential muscle memory