

ULTIMATE SHOPPING TROLLEY

Why doesn't Australia have scanners on shopping trollies? Why don't we have trollies that are easy to steer and push? Those two reasons would make life much, much easier when you are shopping. If you are old you can't push a heavy shopping trolley because you aren't strong enough and if you are an ordinary mum that needs to stay within your budget in how much you are buying this is the perfect thing, you know how much you are going to buy and the shopping trolley won't be heavy. This is one reason why I improved/redesigned my trolley with scanner entry to Young Scientist Competition from last year.

This year I have improved my design by:

- making it lighter as it's built out of plastic
- Incorporating the idea of a scanner that I used last year to have a running tally of the cost of the goods you put into the trolley. This links to the checkout so that the cashier only has to charge you the total cost of your shopping. It saves time at the checkout as cashiers don't have to repack your trolley which also saves supermarkets money in staff costs
- adding material bags that fit into the trolley, so you only have to pack it and unpack it once
- featuring a foam bumper bar down near the wheels. Every trolley should have this because it is a huge hazard for other shoppers and children. Anyone who has had a trolley run up the back of them will know how good an idea this is.

I think this is a perfect shopping trolley for not only mums, dads and little kids but also old people that can't push heavy things all around the shopping centre.

My last year's model was a metal shopping trolley with a scanner attached to it. I made it so you could keep track of your amount, especially you have a budget you need to get over.

This year's entry has a lot of improvements that would make it a more useful and safer trolley.

After brainstorming ideas (see appendix 1) I had to research where I could get the parts for my trolley from. I researched about the plastic trollies. I found a place in Melbourne where I could get one from their show room. <http://rabtrolley.com/?l=en#galeria>

I needed something else to elevate my invention and I thought when you put your products on the shopping counter and you have to dig through the trolley to find the cold things so you can scan and pack them together. I thought if you put bags into your trolley where you can separate the cold and maybe bread and fruit and veggies it would already be easier again. So, I researched some bags you could fit into the trolley.

<http://www.packingsorted.com.au/>.

I researched if there was such a thing anywhere around the world and I found that there is a shop in England called Tesco that has a scanner that is connected to a shopping basket. I thought it was a bit inconvenient because you have to hold the scanner and the basket at the same time meaning you don't have any hands to get your products off the shelf. If you have a child with you, you couldn't hold them either. <https://www.tesco.com/scan-as-you-shop/>

IMPROVEMENTS FOR THE FUTURE

When I did the surveys, a couple of people said it would be great to have a cup holder joined to the trolley. They also suggested you could have compartments built into the trolley and more than one size trolley. The trolleys also need to good quality plastic so they don't break easily. I should have researched more about the type of plastic they use and do some testing to find out the strength it is. A safe phone holder to the trolley to store and still be usable is another I wanted to add.

STEM CONSIDERATIONS FOR THIS MODEL

Science that comes into my project is the forces of the metal bar hitting the back of people's legs and the technology of the barcode scanner connecting to the computer and the website.

Science is the study of the natural and physical world by collecting data, observation and experiment through a systematic process called the scientific method. Technology is where we apply science and mathematics to create devices that can solve problems and do tasks. Technology is literally the application of science.

My project is to connect a scanner to a phone or iPad and shop by scanning products and checking how many items you have bought and what is the amount it has come up to on your phone. This has a lot of digital, coding and app design applications of technology. Also it needs to be live so the person scanning the product gets accurate data for their store and the day they are shopping. Collaboration with experts in these fields would be the next step in development.

Different forces that the trolley hits you with results in different injuries. After testing the trolley bumper bar on myself and checking with mum if it's ok and having her supervise, I did an experiment to see how hard it hit a person when you were walking at a normal speed. I sent my eight-year-old brother 7 meters away from me and it took four seconds for me to reach and hit him. So therefore, I hit him at 1.75m/sec. He said that he could feel it but it didn't hurt. I did it to a little boy because if it did hurt it would hurt more for him. If it didn't have the foam on the metal bar it would hurt a LOT more.

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