

Nicholas Richards

User Experience Design
(M5X01239)

Task:

To improve the design of a domestic Kitchen Peeler for individuals who suffer from a disability that effects their hands



Type A

- Parallel to handle
- Resembles a knife
- Blade is fixed



Type B

- Perpendicular to the handle
- Y shaped
- Blade is mounted on a pivot

Both types can have a swivel function,
depending on the product

Case study

Arthritis





Arthritis includes:

- .Pain
 - .Swelling
 - .Stiffness
 - .Joint deformity
 - .Grinding in joints
 - .Warmth
 - .Cysts
 - .Bone spurs
- (Holland 2017)

Arthritis is a common condition that causes pain and inflammation in a joint.
In the UK, around 10 million people have arthritis. It affects people of all ages, including children. (nhs 2016)

Empathy testing



To gain a better understanding on how impaired the individual with the disability may be

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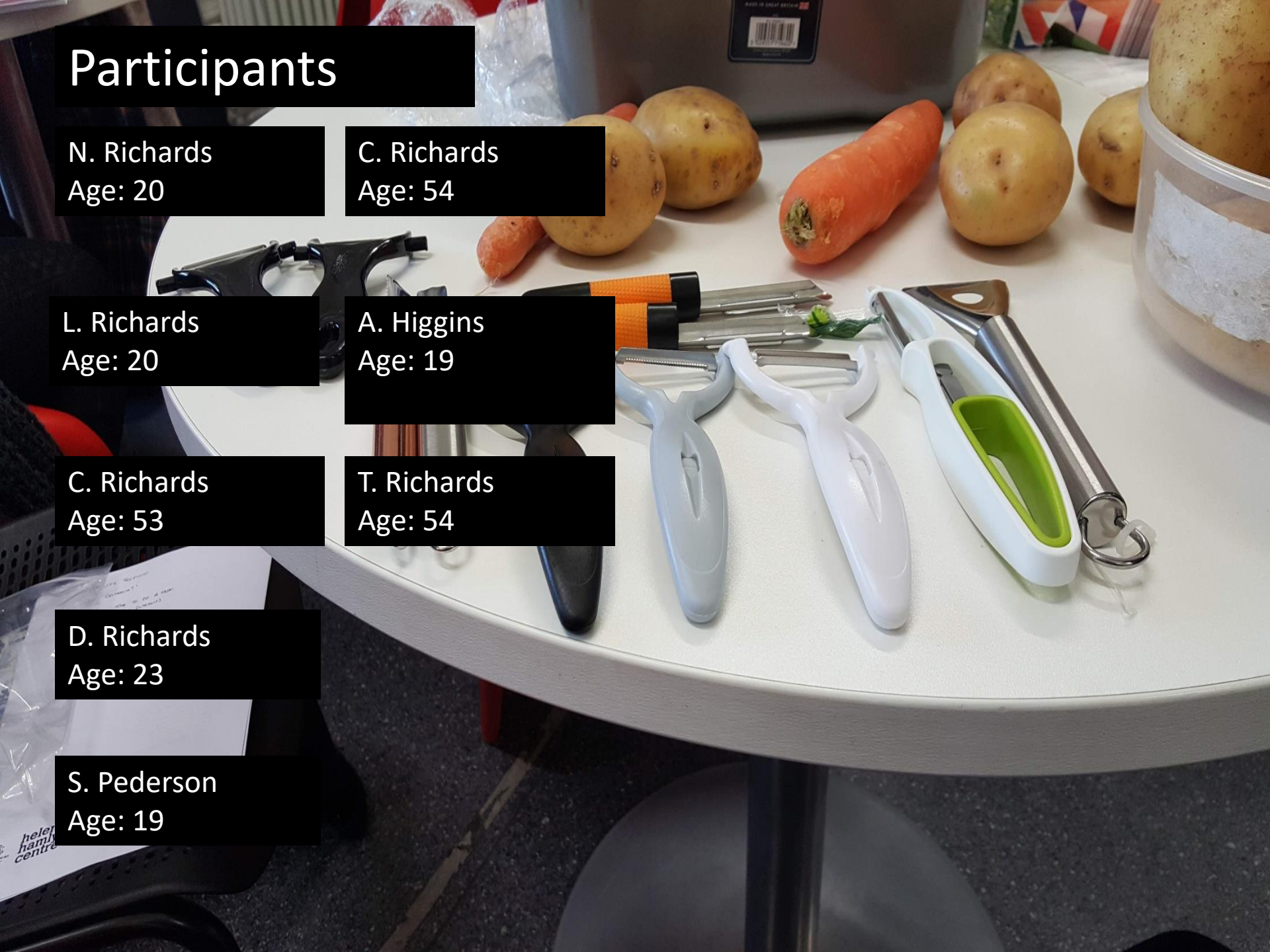
Empathy testing



To gain a better understanding on how impaired the individual with the hand disability may be

This will be done by limiting movement and grip strength as well as having a mixed range of participants of different ages

Participants



N. Richards
Age: 20

C. Richards
Age: 54

L. Richards
Age: 20

A. Higgins
Age: 19

C. Richards
Age: 53

T. Richards
Age: 54

D. Richards
Age: 23

S. Pederson
Age: 19

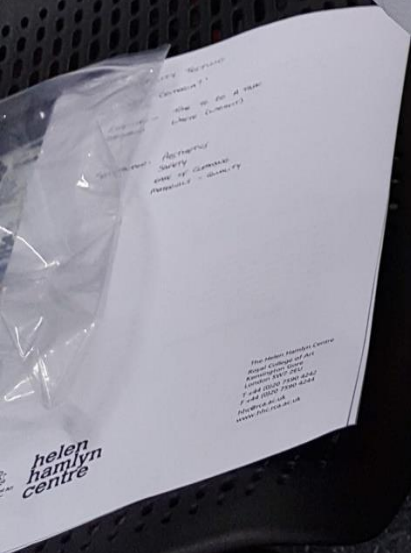








Out come



Out come

Type A

- Had to keep adjusting the grip position since the peeler kept slipping out of the hand
- Handle was too small as well as blade length
- Wasn't able to peel much off with each stroke, meaning that it took a lot of time
- Peelings kept getting stuck in either gaps on each side of the blade



Out come

Type B

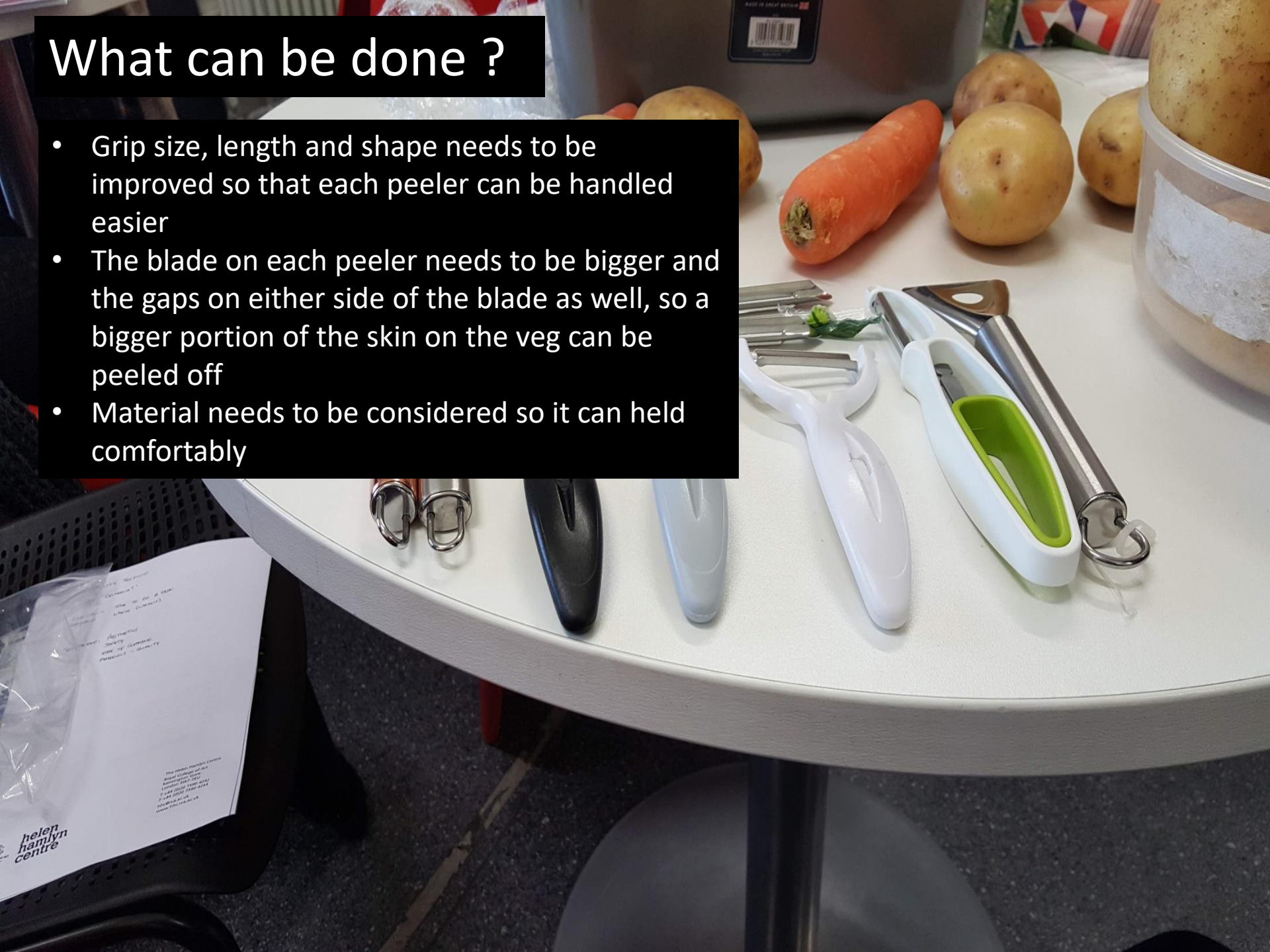


- The handle didn't fit the hand well making it uncomfortable
- Wasn't able to peel much off with each stroke due to grip strength
- Took a while to peel each veg because the peels kept getting stuck in the blades gap, which you had to remove by hand



What can be done ?

- Grip size, length and shape needs to be improved so that each peeler can be handled easier
- The blade on each peeler needs to be bigger and the gaps on either side of the blade as well, so a bigger portion of the skin on the veg can be peeled off
- Material needs to be considered so it can be held comfortably







The tape represents swelling of the joints which is caused by arthritis





What is Rheumatoid Arthritis (RA)?

RA is an autoimmune disease, where the immune system attacks the lining of the joints, causing inflammation stiffness, pain and extreme fatigue. If left untreated, the joint can lose its shape and alignment and lead to permanent disability.



What is Juvenile Idiopathic Arthritis (JIA)?

Juvenile Idiopathic Arthritis (JIA) is an umbrella term for seven or more clinical patterns of inflammatory arthritis of unknown cause in children under 16 years of age.



Quick facts about RA and JIA

More than 400,000 people in the UK (around 1%) have rheumatoid arthritis costing the NHS approximately £560 million per year. The National Audit Office estimate that the total cost of RA to the UK economy is £4.8 billion per year. There are approximately 12,000 children in the UK with JIA, which represents 1 in every 1,000 children under the age of 16. This equates to approximately 15-20 children in each constituency. (NRAS 2018)



Tips on cooking if you suffer from arthritis

- Boil the potatoes with the skin on first before peeling
- put the cookware and appliances you use often on the counter, so you don't have to bend, stretch, or reach into drawers or cabinets.
- Replace heavy stoneware for lighter pots and pans.
- Use ergonomically designed kitchen tools, such as a rocker knife.
- Get an electric can and jar opener and buy pre-chopped fruits and vegetables

(Sayre 2018)



Inclusive design

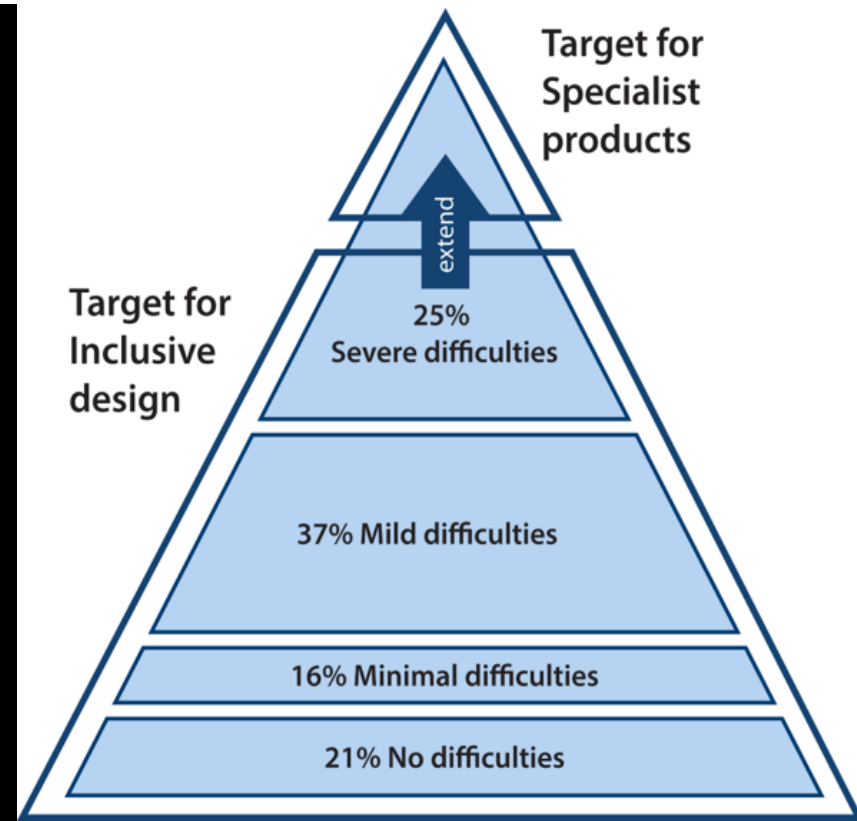
The British Standards Institute (2005) defines inclusive design as: 'The design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible ... without the need for special adaptation or specialised design.'

Inclusive design does not suggest that it is always possible (or appropriate) to design one product to address the needs of the entire population. Instead, inclusive design guides an appropriate design response to diversity in the population through:

Developing a family of products and derivatives to provide the best possible coverage of the population.

Ensuring that each individual product has clear and distinct target users.

Reducing the level of ability required to use each product, in order to improve the user experience for a broad range of customers, in a variety of situations.



The pyramid model of diversity (described previously) can be used to show how inclusive design aims to extend the target market to include those who are less able, while accepting that specialist solutions may be required to satisfy the needs of those at the top of the pyramid.

(Cambridge 2017)

Example of a inclusive
design



OXO Swivel

Tactile rubber material to get a better grip, especially when the tool was wet.

Two scooped out areas that would be under your thumb and forefinger, but they've been filled with the fins to make a simple straight handle that's all you need for a light grip. But when you want a stronger grip, your thumb and forefinger push the fins into the scooped-out areas.
(Wilson 2018)



Design inspiration Type C

(Chef'n 2018)



Palm Peeler Vegetable Peeler

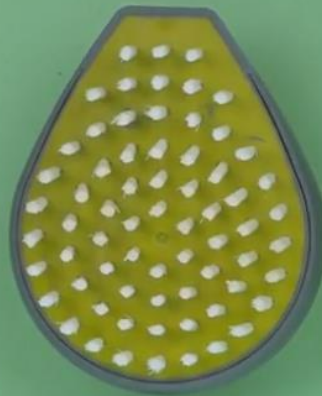


Chef'n Renovated Palm Tools



Watch later Share

Brush



Zest



Peel



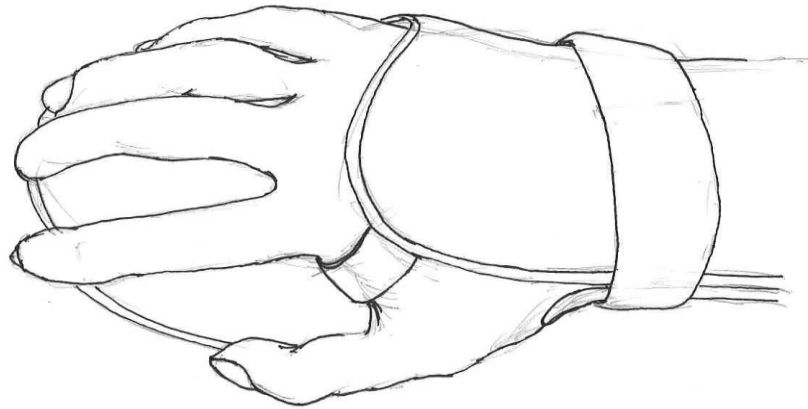
MORE VIDEOS





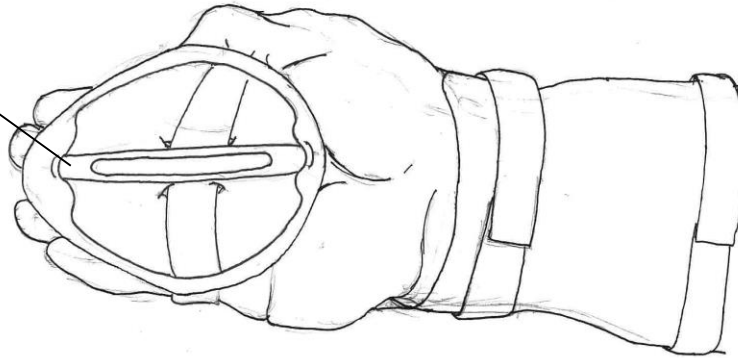
(Chef'n 2018)

.Easier to grip on to
. Brace included to
help with grip

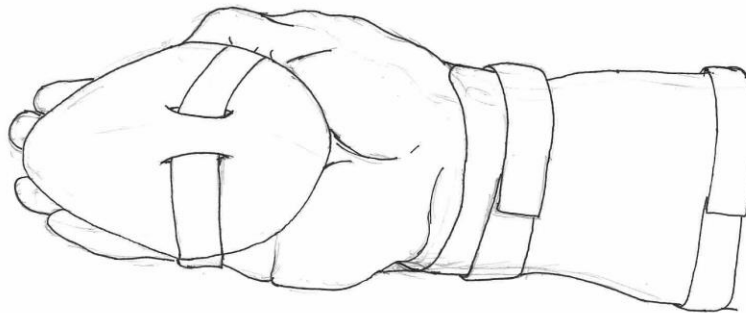


Straps

Blade

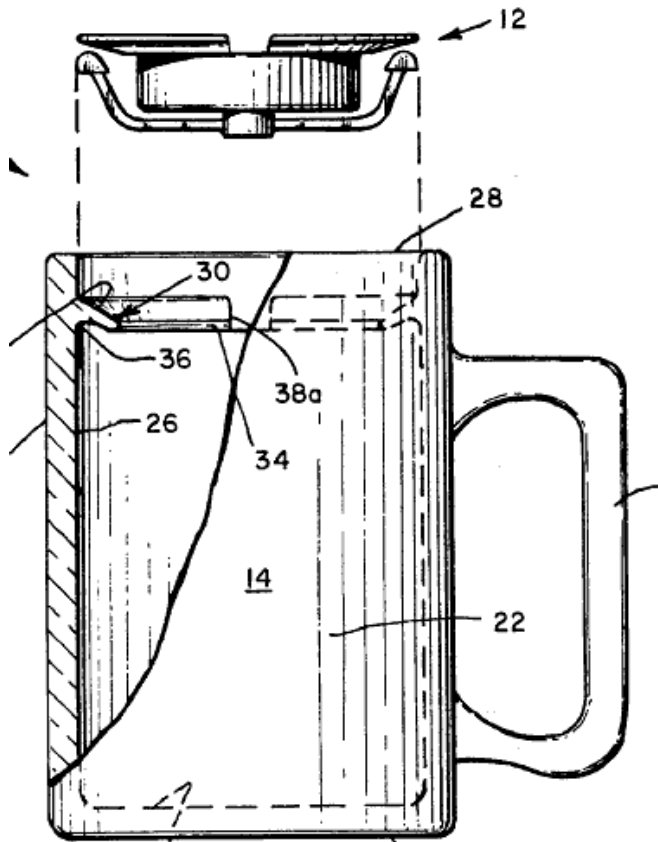


The peeler can
be detached
from the brace
so it can be
cleaned



Design inspiration

Type D



(Karp 2018)



(Taylor 2018)



Blade of peeler will be swivelled

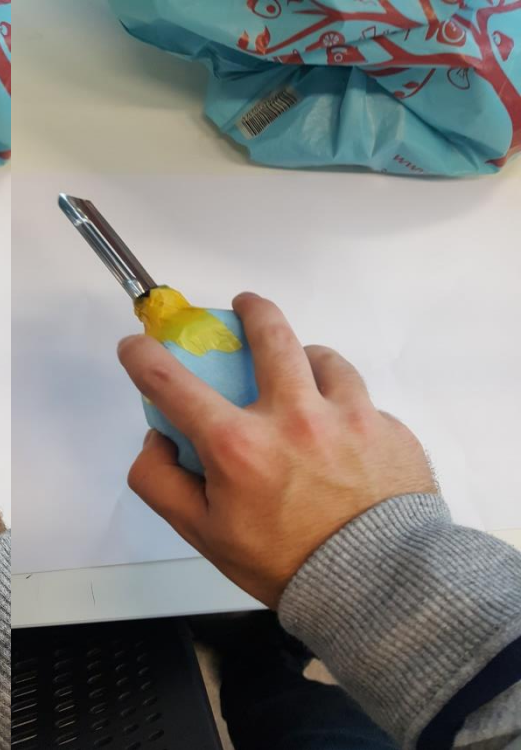
lid that comes off so peels can
be emptied in the bin



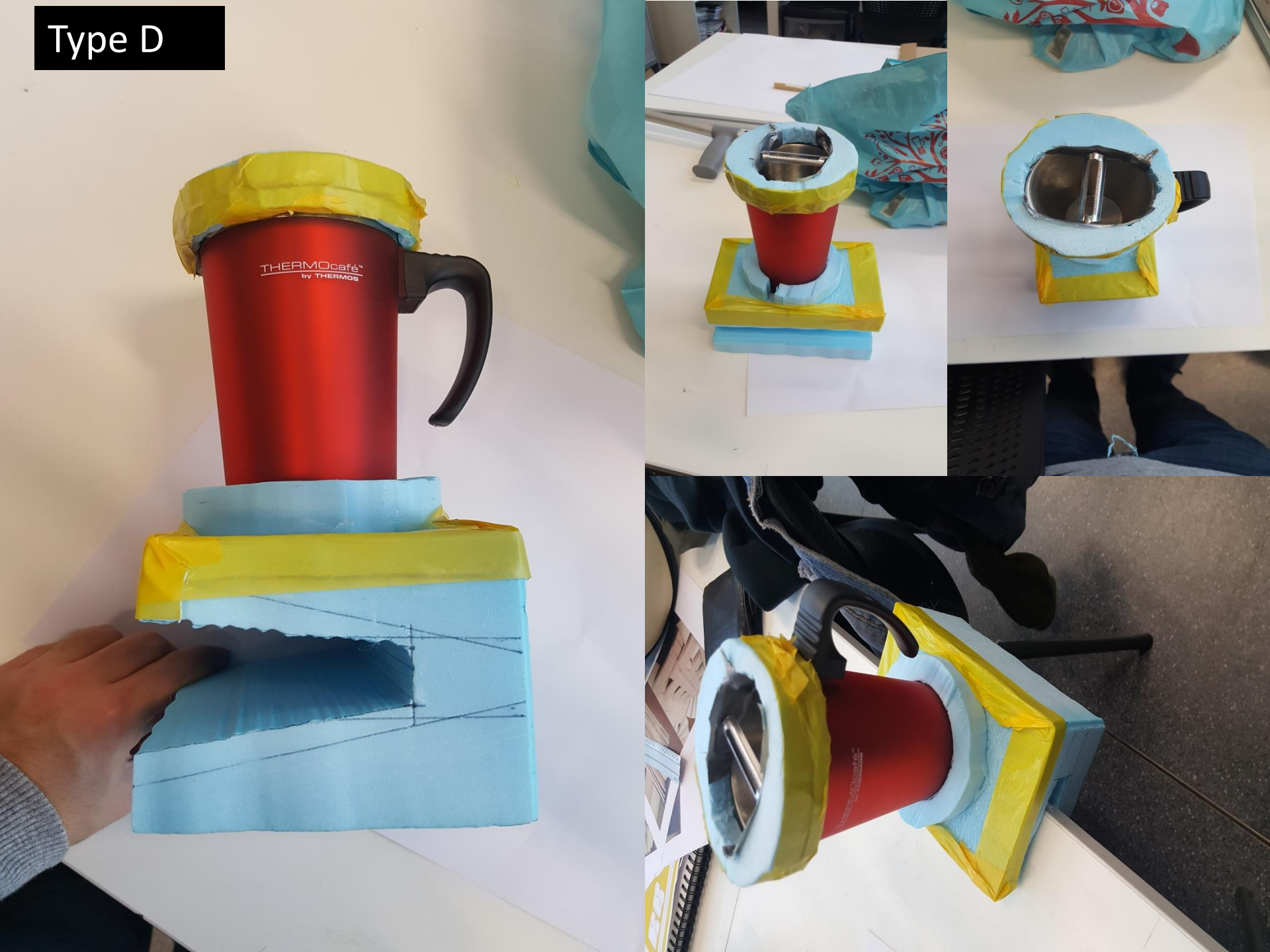
Blade has swivel
function

Top of lid is
hollow so
peelings don't
get stuck

Type C



Type D

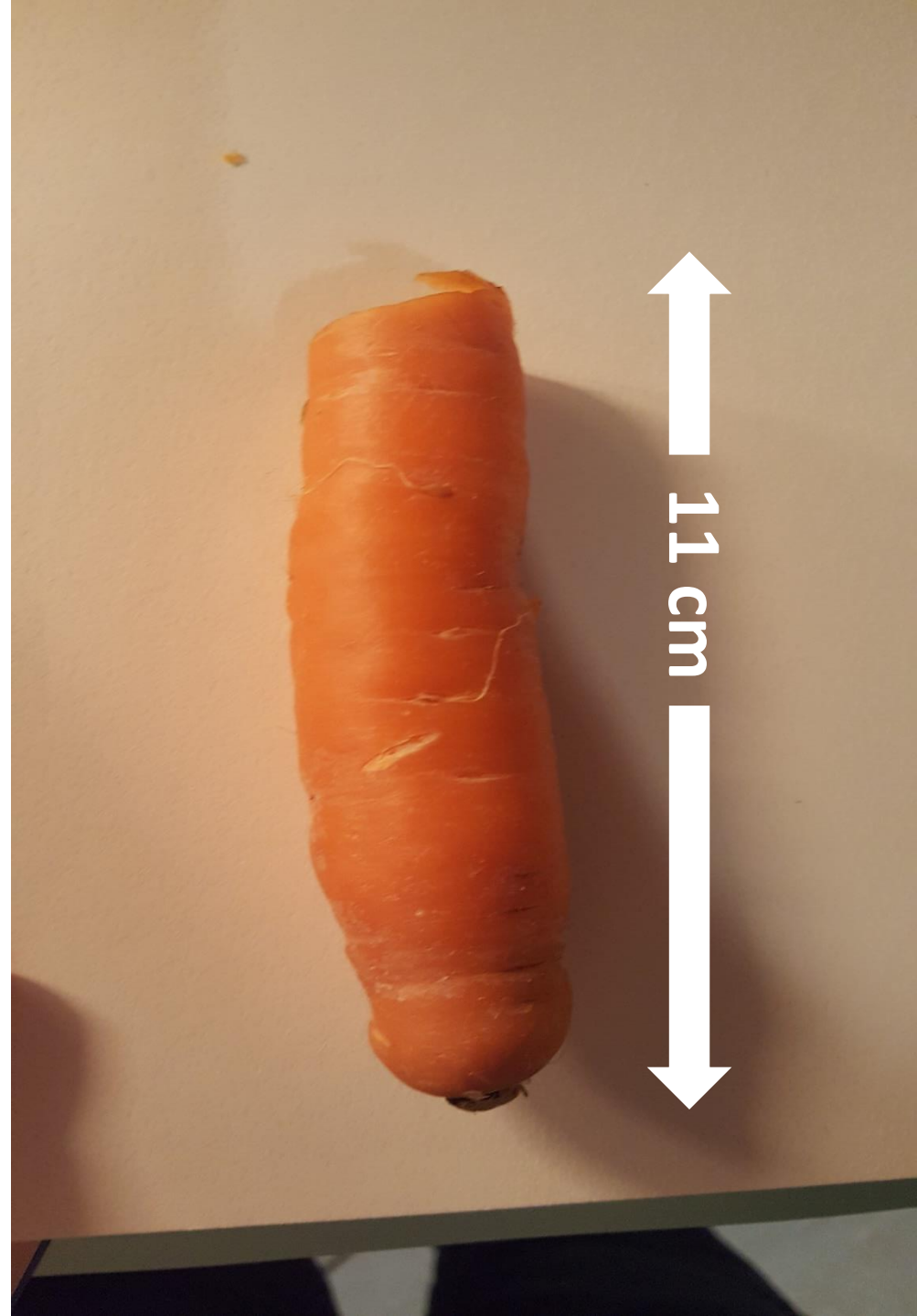


Testing done to improve peelers further

The test will involve timing on how long it takes to peel 3 carrots of the same length to detect effectiveness e.g. the longer it takes the least effectiveness. The skin that is peeled off will be weighed to determine the efficiency by if the weight is high it means its taking to much off.

Variables that need to be the same for each percipient:

- Length of carrots
- 3 carrots to be used in every stage of testing
- The same peelers
- The same work area e.g. kitchen counter top



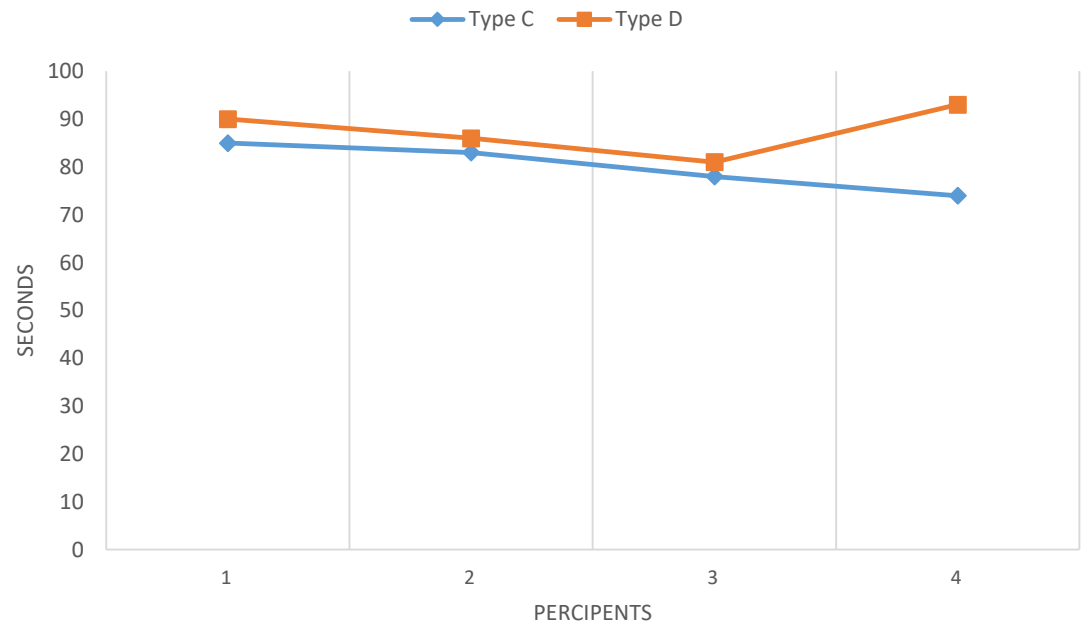




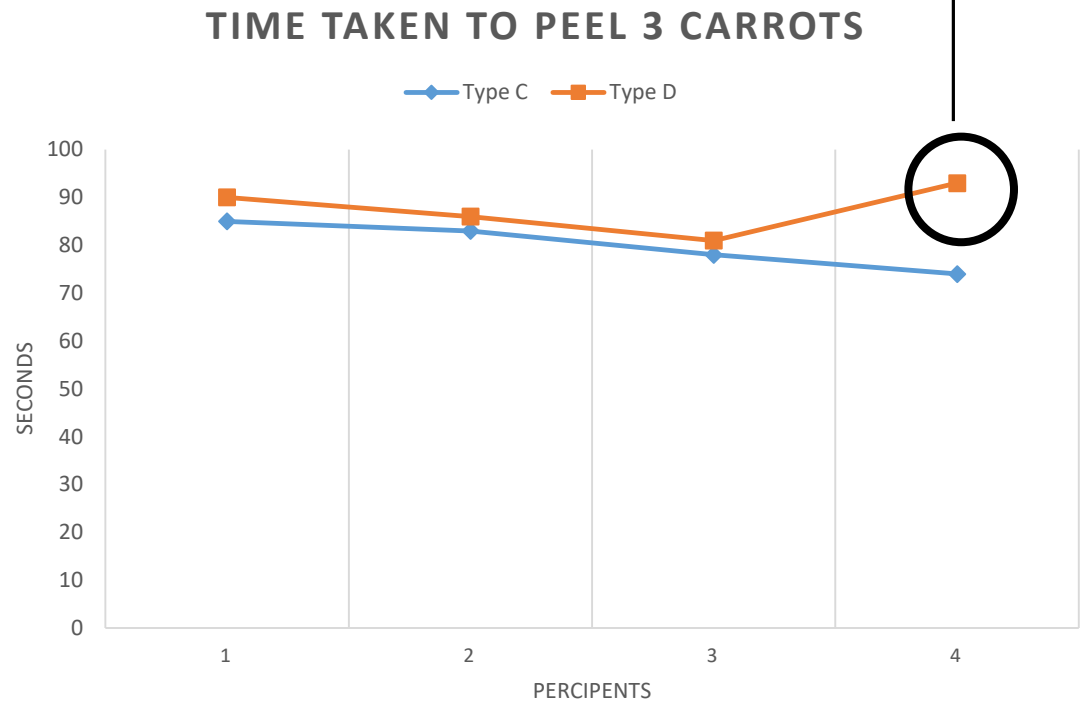
Percipients	Age	Gender
1	54	female
2	20	male
3	20	male
4	23	male

Time taken to peel 3 carrots		
	Peelers	
Percipients	Type C	Type D
1	85	90
2	83	86
3	78	81
4	74	93

TIME TAKEN TO PEEL 3 CARROTS

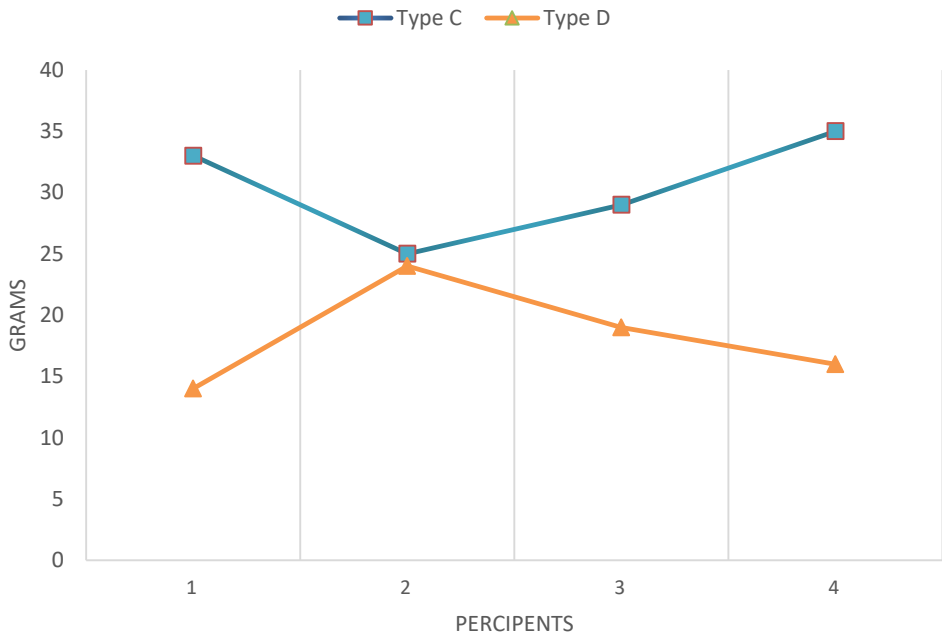


Percipient 4:
Handle was too small to
grip properly

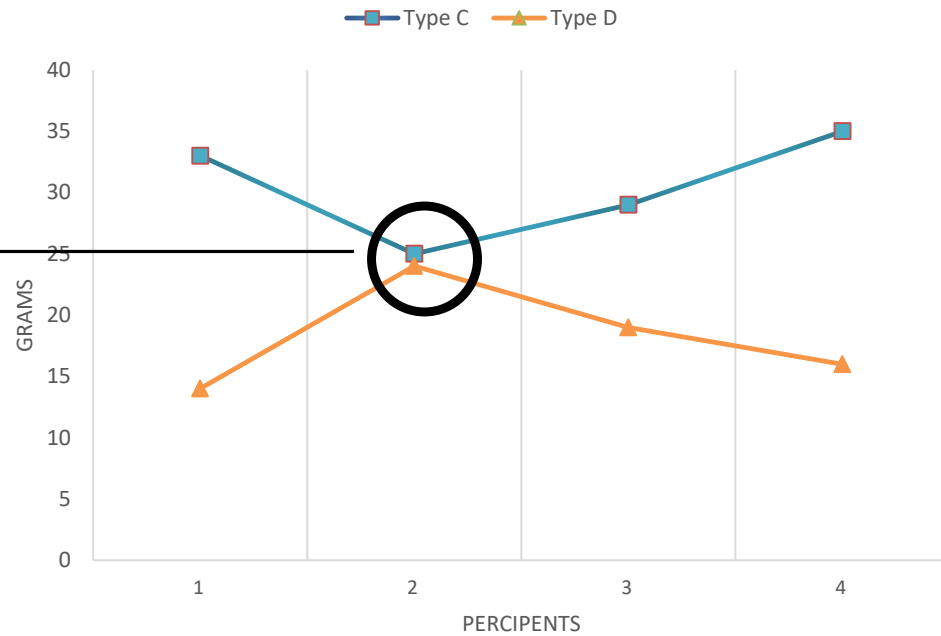


Weight of peels from 3 carrots		
	Peelers	
Percipients	Type C	Type D
1	33	14
2	25	24
3	29	19
4	35	16

WIGHT OF PEELS FROM 3 CARROTS



WIGHT OF PEELS FROM 3 CARROTS



Weight of carrots was not measured before hand therefore although the length was kept the same the girth of the carrots wasn't

This testing and results will not contribute to the final testing. It's sole purpose is to help the design process for peeler c and peeler d

Feedback from percipients

- Felt comfortable but could use more grooves to gain a better grip also easy to grab hold of due to the chunky shape
- Wasn't able to peel towards and away from myself easily , required more force than it appeared
- Peels were still getting caught in the blade





- The handle could be larger but the grip attachment did help with stabilizing the movements when peeling
- The removable lid and bin feature help save time when cleaning up
- No peels got stuck in the blade
- The grip attachment did get jammed which was frustrating

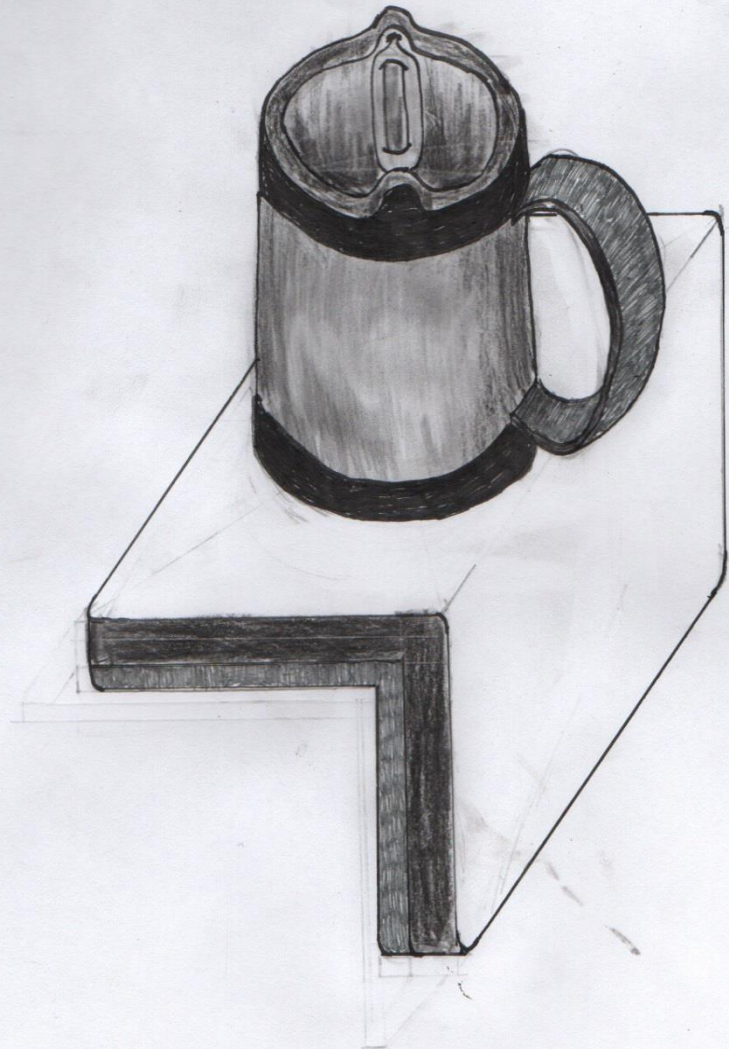
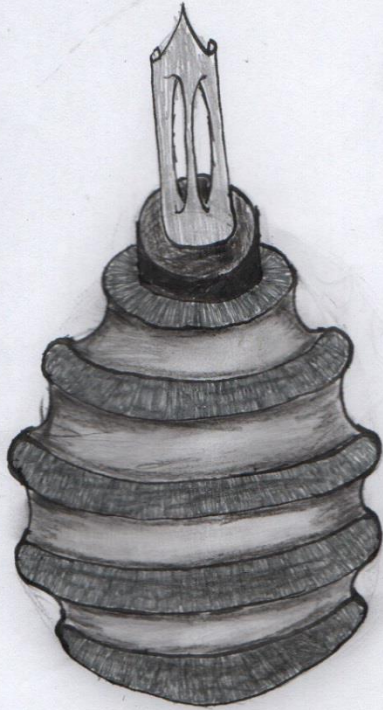


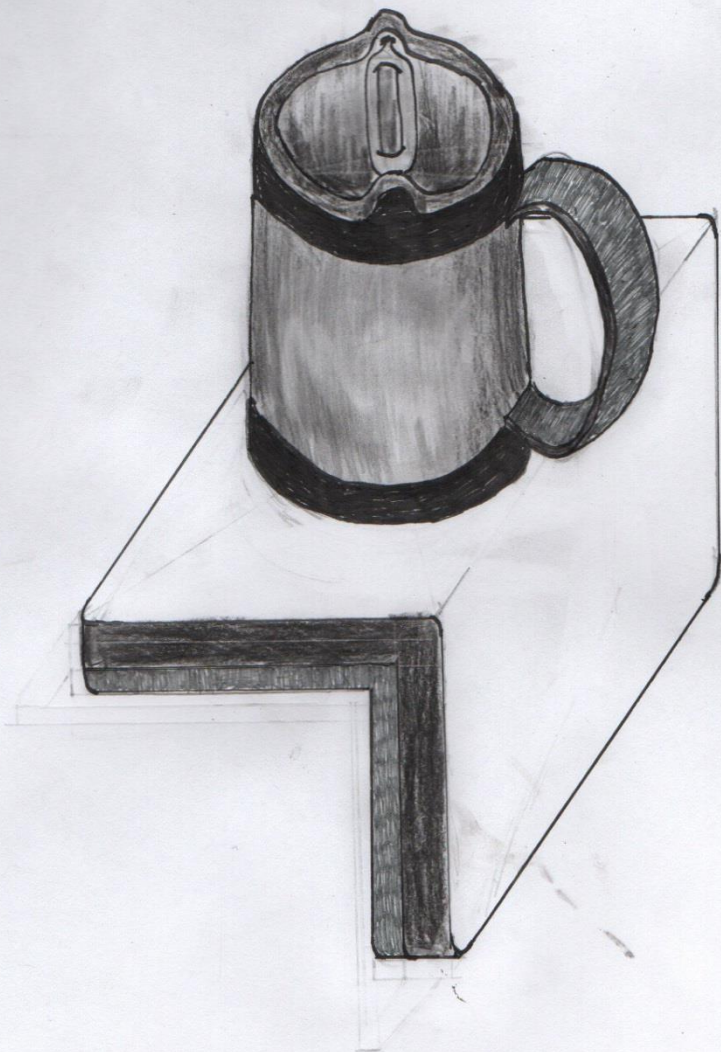
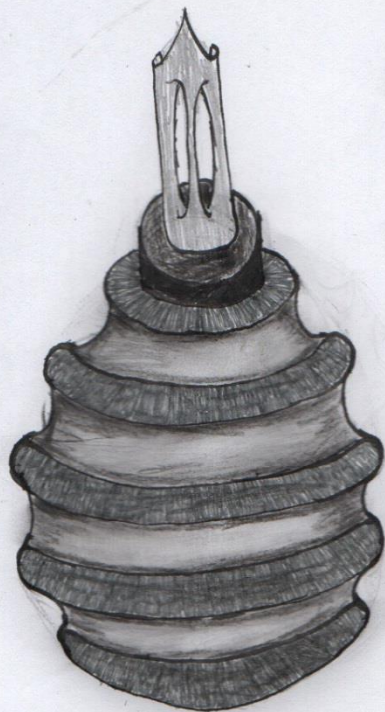


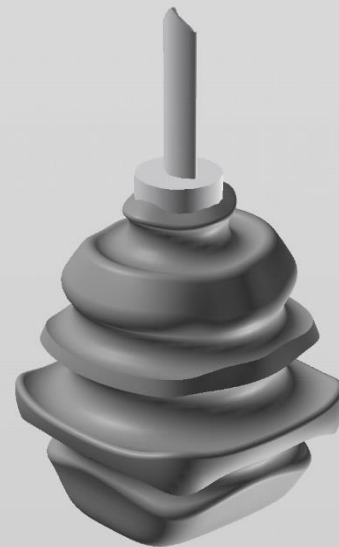
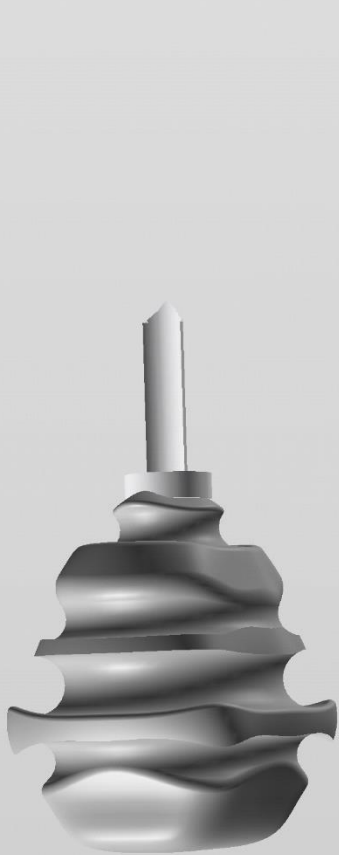
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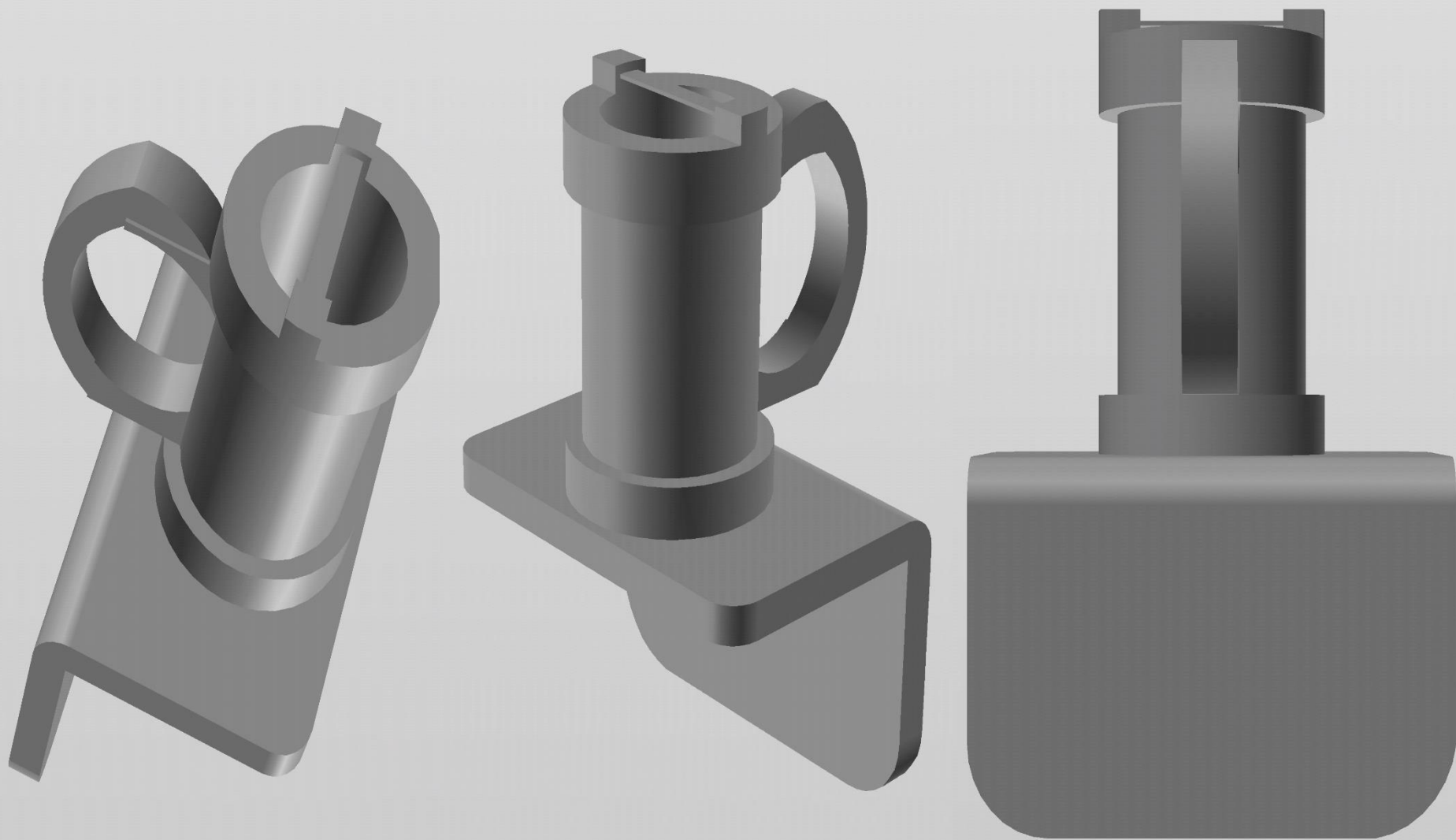


2 working prototypes development









2 working prototype outcomes



2 working prototype outcomes



Will be used in testing with the existing products e.g. peeler A and peeler B

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