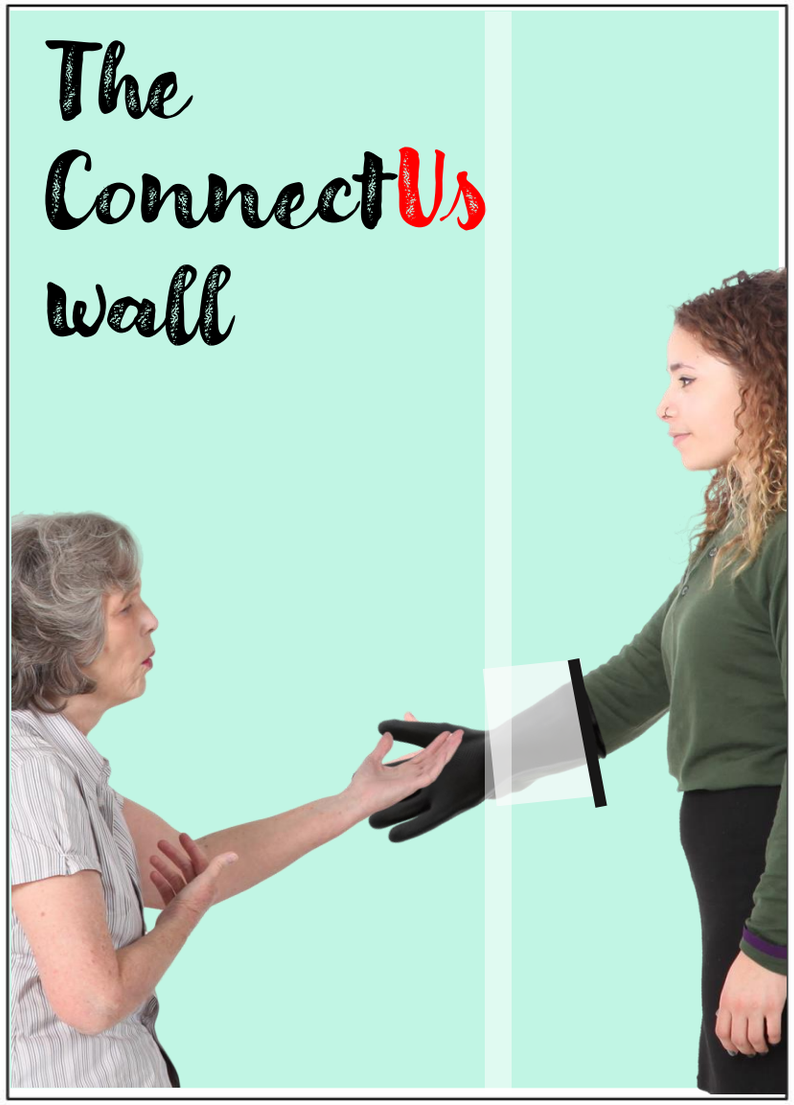
YOUR
BIG IDEA

Summarise your idea using our 'fill in the blanks' template below and a visual which reflects your project.



MY INNOVATION IS CALLED ConnectUs Wall

MY NAME / TEAM NAME IS Monique and Aurelia

I / WE GO TO SCHOOL AT Aquinas College

MY / OUR BIG IDEA IS A transportable barrier that separates the visitor and the COVID-19 patient, with built in gloves so they can hold hands to comfort one another while in hospital.

AND IT HELPS People with COVID-19 be with loved ones during stressful times.

BY SOLVING THE PROBLEM OF Patients with contagious diseases such as COVID-19 not being able to see their loved ones whilst in hospital. Sadly, they are dying alone.

Our innovation ensures that contagious patients can be with relatives in their final hours.

THE PROBLEM

Communicate the problem you are trying to solve, how big it is, who it affects and why it matters.

People are dying alone

Our problem is that people with COVID-19 can't have visitors and are dying alone in hospital. There are times when a video chat is simply not enough. The last few moments of your life are one of those times. Patients may just need to hold a loved one's hand sometimes and families are not getting a chance to say goodbye to their dads, mums, grandmas, and grandpas, siblings and cousins.

Proof that this is a real problem- interviews, surveys, and polls

We asked our families and closest friends how important it would be to see their loved one in their final moments.. "***Most important***", "***critically important***" and "***very, very, very, very, very, very important" "I would want to see them even if it meant I got coronavirus too***", were some of the answers that we received. We needed to create a way that people close to the contagious patient could visit them ***without*** contracting the illness. We know that there is a need for this, we asked a doctor if it could be used by hospitals and he said yes, it was a big problem that COVID-19 patients can't be with their family while in hospital. We sent out a poll to our classmates asking: **Do we need to produce a solution to stop people with COVID-19 from dying alone?**

81.25% said YES, 18.75% said KIND OF, and 0% said NO.

Worldwide

Confirmed	Recovered	Deaths
4.31M	1.52M	294K
+82,591		+4,261

New Zealand

Confirmed	Recovered	Deaths
1,147	1,412	21
+0		

With a shortage of PPE, people can't visit their loved ones

When we heard about the death toll that COVID-19 had on New Zealand through a news article, we were sad. When we heard that these people were dying alone, we were heartbroken! It is a massive problem that people can't be around their family in such a stressful time. With a worldwide shortage of PPE, we need to produce a more sustainable (as it is reusable) solution. It effects everybody with a relative or close friend who has contracted COVID-19, especially the elderly and those with underlying heath conditions who are the most at risk for dying due to COVID-19. 100% of those who answered said that it really mattered to them that they got to be with their loved ones whilst in critical condition. By the 8th of May 2020, 270,000 people had died alone as a result of COVID-19. We knew that we needed to innovate a solution to fix this.

INNOVATION NAME

ConnectUs wall

YOUR RESEARCH

Communicate who your innovation is for, what they need, who you spoke to when carrying out your research and what technology or science you might use to make your innovation work.

Who is it for?:

*Our innovation is meant for hospital use. The **ConnectUs** wall is for when patients have become so sick with COVID-19, that they have to be hospitalised. It is also helping family members cope.*

Who else did we talk to?

We interviewed:
- a doctor and
- a nurse about inside information about hospitals (treatments, conditions, if our ideas would work)
- Family members. We surveyed them asking how important it was that they are with their loved ones when they die?
- Classmates and peers. We put up a poll asking, "do we need to come up with a solution to stop people from dying alone from COVID-19?"
- A husband and wife who spoke about their experience when the husband was hospitalized.

How does the virus spread?

The virus can be transmitted through droplets from coughing sneezing or from someone's breath and by touch. We originally thought that the **ConnectUs** wall had to be airtight, but it is NOT an airborne virus! The droplets are to heavy to stay in the air.

Research on materials:

Gloves:
- Accessible
- Hard to rip
- The Virus CAN'T PASS THROUGH IT!
- Disposable after each person or easy to clean
- To feel as much like an actual hand as possible
- Easy to attach to the wall

WE CHOSE TO USE THE LATEX GLOVES

Wall:
We then looked at the different materials that we could use as the walls for our ConnectUs wall, with the help of a good old fashioned pros and con list, we came to the conclusion that Perspex would be our best option

PRO's of PERSPEX	CON's of PERSPEX
Easy to clean	Scratches easily
Light	Easily stained by grease and oil
strong	Bends easily during construction
Most types of acrylic have a greater resistance to impact than glass	

PRO's of PLASTIC*	CON's of PLASTIC*
More flexible than Perspex	**EXPERT OPINION**** saying that plastic is **NOT** the best option for our innovation!
Doesn't crack as easily under stress	Has a lower transmission of light than acrylic (Perspex)

PRO's of GLASS	CON's of GLASS
Easy to see through.	Breaks easily
Doesn't scratch as much as Perspex	Not flexible
	Expensive to ship (in comparison to Perspex)

Can we do it?

We spoke with a builder and asked if our idea would be possible to build, we also spoke with a doctor, both came back with the same response, YES, very doable.

What kind of people will be using this?

So, now we know that all COVID-19 patients are kept in a ward, we couldn't just tailor the **ConnectUs** wall to a single patient, it had to be able to be used by a patient in a ward. We also had to make sure that the ConnectUs wall was as cheap as possible, and suited all visitors, including those in wheel chairs. To accommodate for the ward patients the only thing that we had to find was what the average door frame size is (2400mm high and 910mm wide. We doubled the width in case they used double doors) and to make it wheelchair friendly we lowered the section that the glove is attached too, meaning that a person in a wheelchair could reach it (with the bottom of the glove at 60 cm above the ground, if the visitor is in a shorter chair, a ramp can be placed beneath them) and a person who can stand only has to sit on a chair. This all helps to determine how big we need to make the **ConnectUs** wall.

What kind of procedures would the visitor have to go through?

"The visitor would walk into the hospital through the main entrance, then through a single door from the foyer to the ward where they would be held in a neutral area and would have to put on PPE with N95 masks before going with a nurse into the ward and then the room to be with the patient."- Dr King who we interviewed. Of course, with the **ConnectUs** wall, you wouldn't need to waste valuable PPE, but it is VERY useful to know that there is a neutral area.

YOUR INNOVATION

Explain your final idea, how it works and how it solves a problem.

PROTOYPING

Made from a tissue box and a plastic sheet from some food packaging- shows how it would be set out.

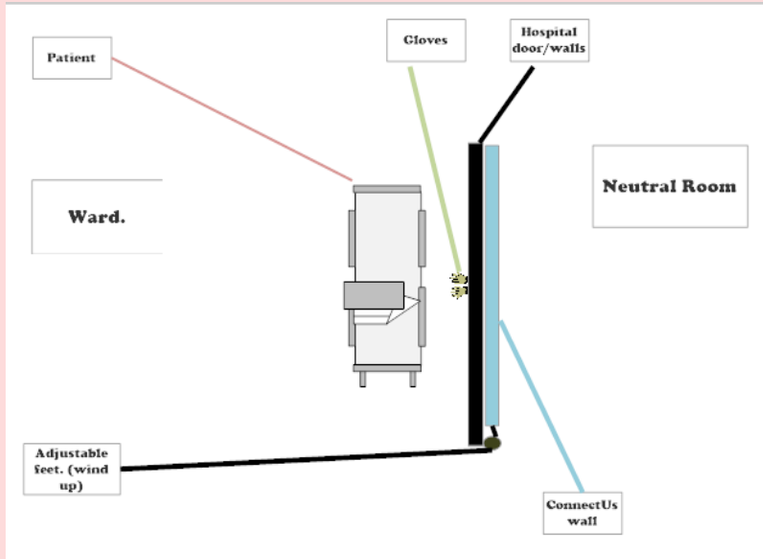
Made from some cardboard, plastic from some food packaging, and a dishwashing glove-shows how the glove would work

FINAL DESIGN

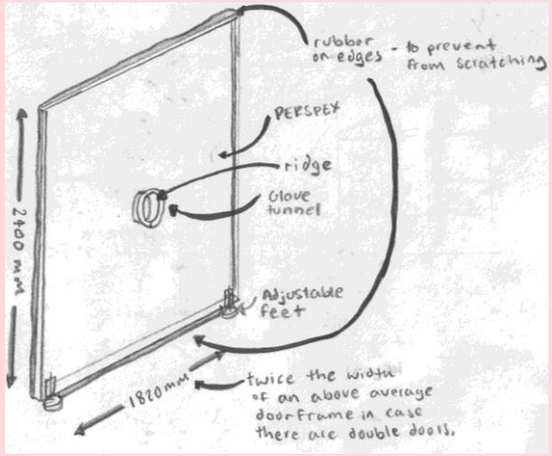
How it would be laid out

When we interviewed the doctor, we found that there were two parts to a hospital ward. There is the actual ward where the patients sleep, and also what they call a neutral room. Because we don't want to infect ourselves while visiting our loved ones, it is safer to stay in the neutral room. The neutral room is the middle room between the ward and the hallway. There is also a door separating the ward from the neutral room. This is the door we want to focus on. We put the ConnectUs wall against the door on the neutral room side, place the glove in, and have the sick relative moved to the door. The door is opened, and the visitor can place their hand in the glove and comfort and talk to the relative. As they are not on their treatment, they likely won't be able to talk much. But being able to comfort one another is the next best thing. With this ConnectUs wall, a COVID-19 patient doesn't have to be alone in their final hours. They can have somebody for emotional support. After each use the wall is sterilised and the gloves are swapped out, and the wall can be transported.

When we talked to a man who had been through the experience of being hospitalized with COVID-19 and showed him our ideas, he said that it would have been a great help. Not just for him, but for his family. It was a very scary time, and being around his loved ones would have been really incredible.



Materials



The design of the wall

The ConnectUs wall is a 2400mm high by 1820mm wide sheet of Perspex. On the edges it is lined with rubber to prevent from scratching. Built into the wall is a hole that starts at 60cm above the ground. Connected to that hole is a tunnel, on end of the tunnel is a ridge. This is what we call the glove tunnel. You place the glove through the tunnel, wrap the ends around the ridge, pulling the edge of the glove taunt so it doesn't fall off. The ridge is smooth so as to not rip the glove. On the bottom of the Perspex, screwed in the sides, are adjustable feet. This ensures that the wall will stay upright.