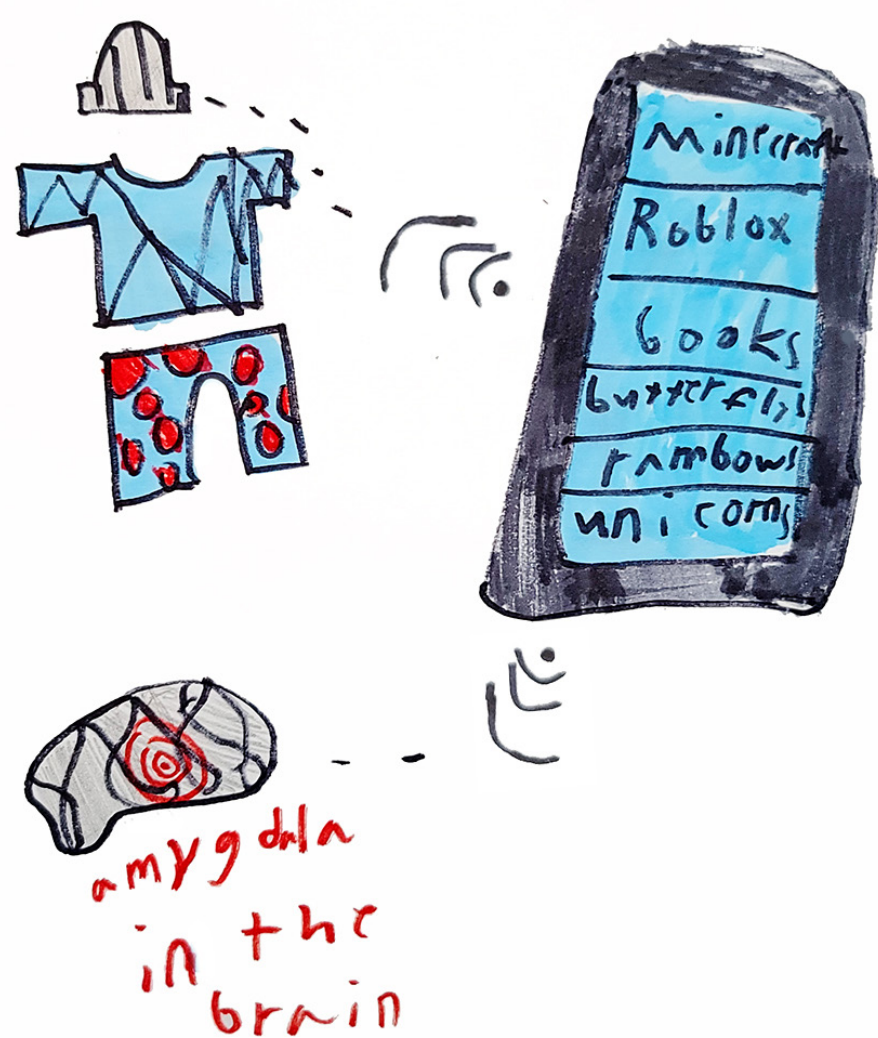




Nightmare-No-More Pajamas



Our Nightmare-No-More Pajamas turn the lights out on nightmares for kids everywhere! These comfy pajamas and sleep cap use a smart fabric with electrodes and sensors that monitor a child's sleep cycle. The pajamas can comfort the child by helping them to change their bad dreams as they are happening.

Based on the technology used in smart beds, our pajamas can monitor heart rate, how much someone sweats, and can detect

hormone changes from the fear center in the brain. The pajamas are connected by Bluetooth to a smartphone or other device. The child programs their favorite story or most-loved ideas into the smartphone before bed. **When the pajama and sleep cap sense a nightmare is starting, sensors will alert the app to download one of the child's programmed stories to the brain where it will change the nightmare into a wonderful dream.**

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Present Technology

Smart beds are used today but the technology is still new. They use sensors to read how someone is sleeping. They use smart fabrics to test the temperature of the person and cool them down or heat them up. They can also sense how much someone moves or sweats and can see how fast your heart is beating. This can all be connected to your smart phone.

The problem is that this technology cannot sense when you are having a bad dream. No one has used this technology to connect to the brain to gather more information. Sometimes kids roll off their beds or sleep somewhere else. The problem with a smart bed is that you have to be on it for it to work. With our pajamas you can sleep anywhere like at your grandparents' house and it will still work.



Future Technology

Our Nightmare-No-More Pajamas measure your heartbeat and temperature and can help you change and control your dreams.

The pajamas and sleep cap are made from smart fabric and are connected to a smart phone. Before you go to sleep you can program the things that you like doing or that make you happy. **When signals from the sensors in the smart fabric are sent to your app on the phone, the app downloads the programmed thoughts into your brain through the same sensors and electrodes.**

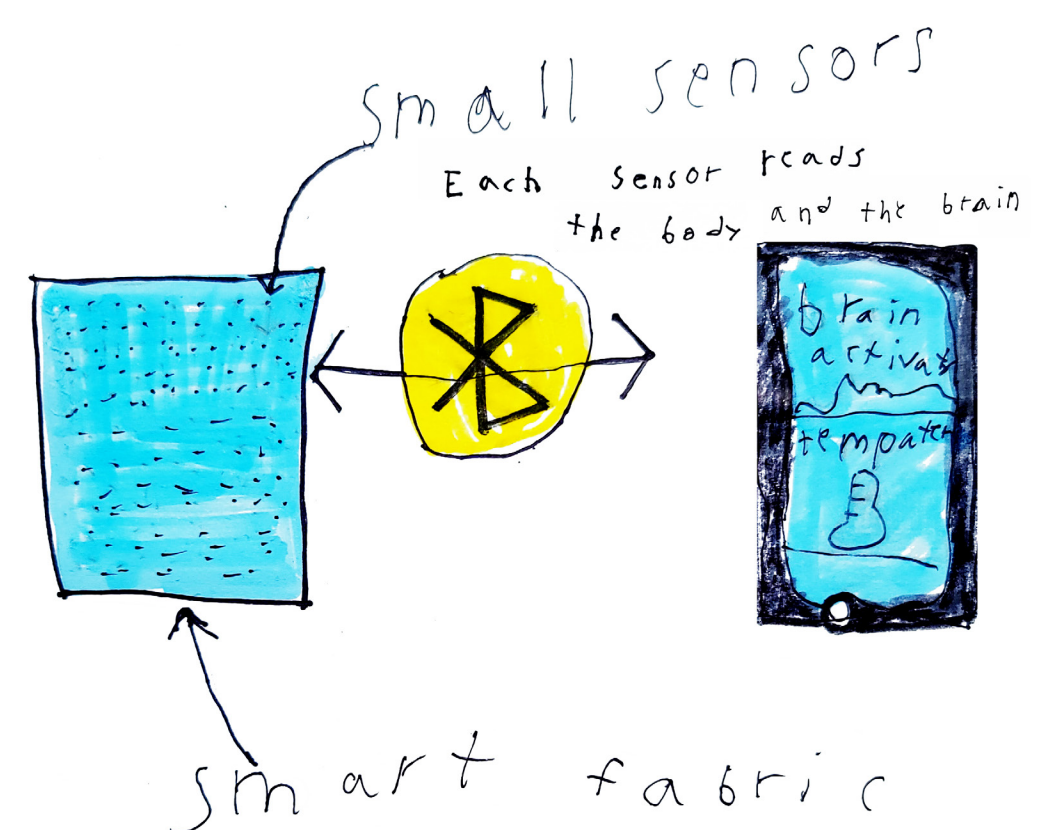
If you like playing Minecraft, the app can download your favorite Minecraft world and when you have a bad dream the sensors in the pajama can send you the Minecraft data into your brain so that you

are able to change your dream. It will also record everything that is happening so when you wake up, you can look in your Minecraft world and see all the things you created while you were asleep.

It doesn't have to be a video game that you download. If you like butterflies and rainbows, the pajamas can send you animated images of these things during your nightmare so that will help you calm down and help you change your dream. You can reprogram the app that is connected to the pajamas every night so you can dream about something that you like each night.

We learned about Moran Cerf who is a Neuroscientist Professor and a computer hacker. He said that there is a point during a dream that a person is asleep but aware.

A person can learn to change their dream at that point. We imagine that with our technology our phone app can send signals about the programmed story to the person's brain through sensors in the sleep cap they wear on their head. The brain will receive those stories and change the terrible nightmare the person is having into something the person likes.



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Our Design

To make our technology real we would have to study the brain and how it receives information.

We would need to work with neuroscientists and doctors and do lots of sleep studies. Computer programmers could help us figure out how to program sensors and the app used to control the pajamas and sleep cap.

Controlling brains with computers has never been done before and can probably be pretty dangerous so it is important to get the right team of people doing the

research and testing. Computer language is similar to how the brain communicates with the body, but they each use different materials.

The brain is more creative and can imagine new things. A computer follows commands and is not as creative. The challenge would be to create a translator that would translate one language into the other. This could be built into the app that is installed on your smart phone or could be built into the sensors and electrodes that are in the smart fabric.

Smart fabric exists in our world now, but it would need to become more sensitive if we want to send and receive signals from the brain. We would need to hook humans up to machines and connect sensors to their heads. These sensors could provide data for scientists and would help them to figure out how information is sent and received to and from the brain and phone app.



This is us making our smart fabric prototype. We made a small sample to see how the fibers could be woven together.



This sample shows the invisible smart fabric. The conductive fibers are there but you can't see them.



This sample shows the conductive fibers as a design in the fabric and has the motherboard attached to the smart fabric. The motherboard sends signals to your smart device to change your nightmare into a good dream.



This is us programming a dream into the smart device that would be connected by Bluetooth to the motherboard of the smart fabric.