

Project Summary (Grade School)

Bandages are commonly used to cover and protect wounds from environmental factors. They also hold cuts together, preventing patients from bleeding out. According to the Center for Disease Control and Prevention (CDC), nearly 270,000 Americans died from seriously infected wounds. However, protecting wounds with bandages prevents bacteria from entering the bloodstream, therefore lowering the risk of infection. Adhesive bandages are made of a flexible sheet of material that sticks to the skin. The wound is covered by a cotton pad that absorbs bodily fluids. Current bandages exist in different shapes, sizes, and colors that fit individual customer needs/preferences. Some bandages are even water resistant and contain healing ointments. Despite the many benefits that current bandage designs provide, there are still opportunities for improvement,

With current bandage designs, it's hard for the user to determine if their wound is infected. Since the product's main objective is to cover cuts, it can be difficult to determine which healing stage the wound is in. On top of this, most bandages are made of materials that are bad for the environment.

To address these issues, we have designed a plastic-free bandage with the ability to detect an infection. Our bandage backing is made of cotton-hemp fabric, which can break down in the environment, preventing the creation of any waste. It's also durable, comfortable, good at wicking away water, and can come in many different colors. The cotton pad contains a small amount of Bromothymol blue, an infection indicator. Bromothymol blue will start off green in color and changes to turquoise when it comes in contact with blood, which has a pH of around 7.3-7.5. When the wound becomes infected and its pH becomes greater than 8.0, the indicator will turn blue. The color change will make it clear to users when their wound is infected. This way, they are able to go to the doctors for further help before the consequences worsen.

Our bandage is different from any other product on the market due to its ability to detect infections and break down in the environment. We believe our bandage design will be well-liked by consumers, competitive with respect to other bandages, and extremely profitable.