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LighTable Research Paper

Social anxiety is the fear of social situations in which one has to communicate with others. Approximately 12.1% of adults who suffer from social anxiety disorder at one point in their lives. In the United States of America, more women are diagnosed with anxiety than men. This disorder is the number one diagnosed mental illness in the United States. A disorder is something that interferes with a person's day-to-day life. Because of this disorder, people become scared when they face situations in which they have to eat or make a phone call in public and be the center of attention. Social anxiety makes people continually worried about what others think of them. Our product helps students with social anxiety disorder by allowing them to communicate with their teachers without drawing attention to themselves. This product lowers their social anxiety levels in a typical classroom environment.

This mental illness isn't something that only a certain group of people can have. Studies have shown that people as young as thirteen years old have been diagnosed with social anxiety. Though there isn't one specific cause of social anxiety, there are some factors in a person's life which can eventually lead to it. For example, if someone was neglected or experienced a traumatic event as a child, they are at a higher risk for developing social anxiety disorder. Another likely cause of social anxiety is having a blood relative with a mental illness. People with first-degree blood relatives who have social anxiety are also put at risk for developing the

disorder. This means that if a person's direct family member (mom, dad, brother, sister) has it, they are two to six times more likely to develop it.

An additional reason we made this product was to make classrooms that are regularly noisy more quiet and orderly. According to hear-it.org, "Noise levels inside the classrooms were above 50 dB, reaching 60 dB occasionally. Forty percent of the students said they had difficulty understanding what the teacher said due to the noise. In 50 percent of the schools the average noise level measured was 70 dB" [1]. This is information taken from a study done in Madrid and Barcelona. The Spanish regulation establishes that the standard and healthy decibel level for classrooms is 35 decibels. Therefore, students who are exposed to loud atmospheres for prolonged periods of time can eventually pick up hearing loss. If children are not overwhelmed by the noisy classroom environment, there is a higher chance that they will begin to pay more attention to what the teacher is trying to teach their students in class. This will be beneficial to the teacher because it will make it easier to teach as there will not be as many distractions in the classroom during their lesson. In addition to benefiting the teacher, the students will also be able to gain many benefits from having less noise in the classroom. Since noise can be very distracting, children tend to lose focus when people ask unnecessary questions like going to the bathroom and asking to go and get water. In addition, they lose focus on what the teacher is saying when they have their hand raised while waiting to be called on. If the students have a product that is clipped onto their desk and they can just press a button that causes a light to turn on, they won't be preoccupied keeping their hand up. Instead of holding their hand up and thinking about how much their hand hurts, they will be able to pay attention and actually understand what is being taught.

Purchasing the components at full retail price, we paid $38.76. Assuming we can reduce the cost of the manufacturing of the product as we increase the quantity, we can sell the product for $49.99. If we can lower manufacturing cost to approximately $25 an item, this leaves a 100% markup allowing for marketing, salaries, and profit. Manufacturing larger quantities reduces the price of manufacturing of an individual item. Assuming we would have time to wait for the components coming directly from China, our cost would be lowered significantly. Lower prices allow for better quality marketing and an increased profit. From AliBaba, a flat-topped c-clamp is $3.50 - $4.50 a piece, thus reducing our manufacturing price, as well.

Our target demographic includes but is not limited to elementary school teachers, middle school teachers, and school administrators. This demographic typically attends conferences directed towards leadership, teaching strategies, and classroom techniques. Word of mouth from other colleagues is one of the strongest ways teachers receive information about new technologies to use in the classroom. Not only will this help us reduce costs in marketing, but it will most likely take the name of our product further. Other marketing strategies include emails, social media, and traditional advertisements. We would focus our marketing in conferences which would lead to teachers and faculty members knowing about our product.

Our project is 2.2 inches by 6.5 inches. It consists of: two breadboards, one RGB LED, an arduino board, four buttons, a buzzer, and an RFID module. The three buttons correspond to different colors on the RGB. For example, a teacher would be able to tell their students ahead of time that red is the bathroom light, blue is the water light, etc. The fourth button is to turn off the RGB. When the button is pressed, the buzzer makes a sound for 0.5 seconds. Seeing this can be distracting sometimes, we thought of the idea to implement an RFID module. This would serve

as a “mutw button” for the buzzer. The teacher would have the chip attached to their ID cards or their lanyards they wear everyday. This would not only quiet the classroom, but take attention away from students. All components except for the RFID module are enclosed in a 3d printed case. The only things visible from the top of the casing are the buttons and the top of the RGB. The RFID hangs off the Arduino board on the outside so the teacher can quickly tap or swipe their chips to silence the buzzer.

There is no product on the market that is the same as the LighTable. One product we found to be somewhat similar, however, is the Learning Resources Lights and Sounds Buzzers found on Amazon. The purpose of this product is to promote active learning. The difference between their product and ours is that their product doesn’t have the ability to silence the buzzer. This creates a noisy classroom. Their demographic is children from ages 3 and up while ours is directed towards teachers and administrators. Our product will most likely be mostly made of 3d filament. The other components are the only other materials used.

To make our product different than others, we plan to create long-term manufacturing goals while reducing costs in the process. We have created a product that is like no other on the market and fits the specific needs of students with social anxiety and teachers with noise classrooms. Our low prices allow for cheaper manufacturing which leads to high profits. Noisy classrooms have the potential to eventually cause hearing issues or hearing loss in students. Lastly, with this product reducing noise in the classroom, students have the chance to focus on what the teacher’s lesson is.

Works Cited

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