

Memorandum

To : Dr. SarahOman
From: Team F5: Abdullah Ali, M.Alkatan, Y.Alkatan, Taha Alansari, Abdullah Abdulaziz
Subject: Team Analytical Analysis 1
Date: 10/15/2017

The memo shows the analyses that need to be done for the individual analysis assignment. We will show which team member is assigned to a given task and what calculations have to be done in this memo.

Size analysis (Mohammad Alkatan)

The size of the cubic sensory board will be analyzed based on the size of the standard chairs that are used by children. The standard wheelchair will have a width of between 7-15 inches. The length of the cubic should also have a range between 5-15 inches. The height of the cubic could not be more than 7 inches. Based on the above limits, the weight of the design can be determined as the weight is a function of the size. The optimal size will be analyzed such that the weight will not exceed 5 pounds.

Lights, colors and sounds (Yousef Alkatan)

This sensory board will be used both in the indoors and on the outdoor setup. In both setups, there lighting will be different at various times. Our analysis will entail shining lights of different magnitudes to the different types of colors and checking on the legibility of the letters and the clarity of the colors. A test will be done with a light ranging from bright light to dull light. The type of colors that gives the most legibility for all the lighting will be the one that will be used. The frequency of sound that a child can withstand ranges from a frequency of 100-1000Hz. An analysis will be done on the optimal clarity of the voices frequency that has the least magnitude that can be used.

Sensory parts for each side (Taha Alansari)

On each side of the cube, there will be a fabric that will be put. Based on the engineering requirements, the fabric that is used should not have a toughness of more than 5N. All the possible fabrics that will be used will be tested for toughness. The toughness will be calculated as a function of stress and strain of the fabric. The material that has the lowest toughness will be the one that will be picked. This is because; we want to achieve the highest level of softness of the fabric.

Voltage of battery to light cubes and makes sound (Abdullah Abdulaziz)

The voltage to be used will be analyzed as a total of the voltage that is needed for the light and the amount that is needed for the sound. First, for the bulb, the voltage will be analyzed from the power of the bulb that will be used using the power derivative formula. The voltage that is needed by the sound will be used from the equation of the energy in sound that involves a voltage component. The two will then be resolved through the parallel connection with has a resolve for a total voltage in a circuit. In the process of the above calculations, there will also be a need to take into account of the resistance factors of the material that will be used. An allowance of the voltage should therefore be given based on the resistivity of the type of the wire connections that will be used.

Type of paint (Abdullah Ali Almutairi)

The inboard bulb that will be used will have a certain color or it may be white light. By the use of light charts, an analysis will be done on the interaction of the white light and the various color shades that will be used. The interaction of the colors may give a legible or a faint visual of the cube. This cube is being used for play purposes by the children as their senses are stimulated. The interaction that gives the brightest combination is the one that will be picked. The same paint will not be used for all the parts. It may therefore need that several paints may be picked so that there will be a variety of colors on the cubic.