Sensory Binder

By: Nena Bingaman

Problem

Children with Sensory Processing Disorder struggle to keep calm and focused in a school environment. Previous solutions for this problem such as a weighted lap pad do not have textures or interactive items to help children.

Requirement Specifications

This tool must have an appropriate weight based on the child's body weight. The weight of it should be 7% of the child's body weight [Ellem]. The average size of the targeted user, which is a 5 year old child, is nearly 40 lbs [Moses]. Meaning, this tool would be approximately 3lbs. This tool must also have textures that children with SPD can feel. Textures vary from child to child depending on what they are satisfied by so the binder must encompass a variety of textures.

Materials acquired for this project:

- 1 ½ inch D-ring Binder
- 6 Different 3ft colored rolls of velcro
- Hot glue
- 1pc of 9x11 Sandpaper
- 1pc of 8.3x11.7 Quark textured paper
- 1pc of 9x12 Leather fabric
- 1pc of 10.5x13.5 Plastic canvas mesh material
- Food saver (for sealing the bag)
- 2pc of 8 ½ x11 Heavy card stock
- 1pc of 11.7x8.3 Glitter textured paper
- 1 Hole puncher
- 8x10 Quart sealable bag
- 4 cups Orbeez
- A fish weight scale
- 9 Clear plastic dot protectors with adhesive back
- Pencil

Procedures

Step 1: Acquire necessary materials that are shown above.

Step 2: Activate orbeez in 6 cups of water and let sit overnight.

Step 3: With a pencil divide 1pc of 8 ½ x11 heavy cardstock into 6 equal 5 ½ x 2 13/16 rectangles

Step 4: Cut cork textured paper, sand paper, plastic canvas mesh material, leather fabric and glitter textured paper in to 5 ½ x 2 13/12 rectangles

Step 5: Hot glue each piece of textured paper to the divided piece of 8 ½ x11 piece of cardstock making a grid of 5 textured squares and one empty space. Let glue dry until it is hard.

Step 6: In the empty space place the 9 clear plastic dot protectors stargard on the empty space.

Step 7: Whole punch that piece of paper and place it in the binder.

Step 8: Cut each color of the velcro rolls into two 2 ½ inch strips.

Step 9: Hot glue each strip to a 8 ½ x11 piece of cardstock making 2 even lines of 3

Step 10: Let glue dry until it is hard.

Step 11:Then diagonally place the other strip on its matching color

Step 12: Whole punch the sheet and place it in front of the other sheet in the binder

.Step 13 :Place 1 cup of orbeez into a sealable bag

Step 14: Continue adding one cup to the bag and weighting it until it is successfully 3lbs which is 4 cups.

.Step 15: Seal the bag with the foodsaver

Step 16: Place bag in binder

Testing Results

The binder was successfully meeting the standards of the requirements such as various textures, interactive activities and being 3lbs. When testing, it was concluded that the targeted user could successfully use this tool. The binder was suitable for resting on a child's lap and for children to interact with. The graphs and data table that is shown was a weight test that measured how much of the weighted material was needed to meet the weight requirements.

Redesign

The redesigning that was made was sucking more air out of the bag with orbeez so the binder could be more functional and less bulky. This change successfully made the bag more compact and mobile.

Conclusions

After building and observing it was concluded that the child would be able to find the binder useful to solve their problem. This is because the binder met the requirements of weight and interactive textures which were crucial for this problem. The child would also be able to use the binder in the way it was intended seeing that it is easily held and movable. For a future study the next step that could be taken would be to find out if SPD evolves as the child grows and if it gets worse or better and redesign the prototype so it is suitable for older children.

Graph Results

Weight Test		
Amount of orbeez added to the bag (Cups)	Weight of full binder (lbs.)	Weight is 3 lbs
0	0.2	not successful
1	0.8	not successful
2	2	not successful
3	2.5	not successful
4	3	successful