Project Statement
Adjustable Art Table

September 21, 2005

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Funding: National Science Foundation
Statement of Need

Passion Works Studio helps many artists living with mental and physical handicaps such as cerebral palsy, multiple sclerosis or paralysis. Making art is, as the name describes, the passion of many of the people who attend the studio. Many artists at this studio have difficulty developing the art they desire because of these disabilities. Most common furniture does not meet the needs of this clientele. Something that is tailored to those with mental retardation and developmental disabilities could provide an opportunity for them to create the art they want and give them an even better sense of accomplishment. The quality of the equipment used by these artists is important; it needs to be strong and sturdy because of the amount of use that it can get. A previous design project made for the Passion Works Studio artists was a “Controlled and Adjustable Art Table,” but the design was in need of improvements on several levels. It had limitations that were detrimental to its performance and the customers overall satisfaction with the table. The table was very unsteady for whoever worked on it. Additionally, the table featured an electronic height adjustment which proved to be unreliable. Passion Works Studio is in need of a non-electronic, sturdy, height-adjustable way for its artists to make artwork.

Basic Preliminary Requirements

A table will be designed for any Passion Works Studio artist who may or may not be mentally or physically handicapped. The users of the table could possibly have cerebral palsy, dysarthria, visual acuity trouble, or limited motor skills. The tables in the studio already may not have a height adjustment and therefore do not provide enough leg room for wheelchair users. A height adjustment would be useful for the artists at Passion Works to be more comfortable and create the art they enjoy. The table shall also be sturdy enough too accommodate those who are more physical when making art.

Previous art tables designed for Passion Works Studio have proved to be unstable and cumbersome to adjust. The table should be easily adjustable in order to vary heights to accommodate each artist using it. Other tables on the market are pitch adjustable and are height adjustable but only for the time of installation. The adjustable art table must be adjustable on demand, quickly and easily. Additionally, most standard tables do not allow enough leg room for those in wheelchairs. The legs of the table shall be out of the way of the user. As requested, the height adjustment should not be controlled by means of electrical power. An electrical adjustment would require the use of power cord or a battery. The power cord attaching to a wall and could create a safety hazard for other artists moving about the room. A battery would require more frequent maintenance and potential for breakdown. An electric system would require a switch or some method to activate the motor. The use of a switch to adjust the table is not desired because it could accidentally become switched and injure the artist or even a bystander. It would be too easy for others to adjust the table while someone is using the table. Any mechanical device that has good longevity and simplicity would be adequate. Most importantly, the device and its operations must be failsafe. The safety of the user is of utmost importance and will be forefront of concerns. The texture, corners and edges of the table top must be specifically designed with this in mind. To reiterate, the height adjustment mechanism must not cause harm to the user while in
operation or while the table is being used. Ideally the project will improve upon the past and existing tables and also satisfy the needs of those at Passion Works Studio.

**Basic Limitations**

The table’s height must be adjusted in a vertical manner without electricity. This is because the table may be placed in the center of a room and the use of an extension cord could pose a safety hazard to others. The table must not adjust to a maximum height of less than 42 inches (clearance), nor higher than 27 inches (clearance), but can meet or exceed these limitations. By meeting these height requirements, there should be enough room for an artist in a wheelchair to easily fit under the table comfortably.

The material used in constructing the table should be sturdy enough to tolerate any erratic movements by the artist using the table. The table should not move excessively when bumped accidentally.

Another basic limitation would be the need for the table to have rounded and smooth edges. Many of the Passion Works Studio artists have a different sense of touch and limited motor control. Sharp or pointy corners and edges can create a safety hazard for these artists if they are not careful.

**Other Data**

The table will be placed in the center of the art room. If it had to be moved easily, a set of wheels could be added to the legs. The wheels would need to be added to the legs of the table without affecting the stability of the table. There may also be a need for a height display so that the user or a helper can remember a comfortable height for future reference. This would make it much easier and faster to adjust the table to a specified height for different artists who share the table right after one another.

**Questions**

*For the client, or client coordinator*

1. How large should the surface area of the table be? What is the best width and length that would optimize table usage and not waste any material?

2. Could two artists use the table at once, facing one another?

3. What kind of art would the table be most used for?

4. Can extra devices be added to the surface of the table safely? Would it be helpful if there are holders for the artists’ tools?

5. Are there any special environmental hazards that we should be aware of?

6. Will there be anything extremely heavy placed, purposely or accidentally, on the table?
7. What will the floor surface be? Carpet, tile, linoleum, et cetera?
8. Do materials typically roll off of the table?
9. Will the table be adjusted with the artist underneath it?

**Design Questions**
1. Which means of raising the table is most efficient?
2. Which material would provide the most stability for the table? How thick should this material be?
3. Will the table top need reinforcing support beams?
4. What would be the best way to ensure that there are no rough edges or corners on the table?
5. How would the mechanism of raising the table be controlled? Should there be any safety latch on it?
6. Would the chosen height adjustment require much physical effort?
7. How could the height be displayed quantitatively so that the user could remember a comfortable height?
8. Are there any casing needs to protect the adjustment equipment from tampering or environmental hazards (i.e. water, exposed wiring, preventing other artists from altering setup)?
9. How could the table be portable but also stay put once desired?
10. Where would the table legs and table support beams be placed so that they are out of the way of the user’s legs?
11. Will there be a resolution to where the table can be adjusted? To each inch? Half inch?
Technical Areas

Safety

The safety of the users and bystanders is of utmost importance when dealing with a device such as this. The table could potentially fall, so there could perhaps be a safety mechanism to thwart this. Raising or lowering the table should not require excessive physical exertion to the user, and should allow a user of any stature to do so. The table shall also be stable enough so that it does not move out of the desired position. If the table moves away from the user it could harm somebody as well as create a disturbance to the artist at work. A moving table could potentially injure someone if it has sharp corners, so beveled edges and soft corners should cushion anyone who bumps into the table.

Height Mechanism

The mechanism to raise the table should be the most efficient, in terms of both cost and mechanics. Possible designs could include a crank system, a pulley mechanism, or a pneumatic air lift (such as those in desk chairs). Whatever way is chosen, it should be easy for the user to raise and lower, and also be easy for the user to know the exact height of the table so that it can be set to a comfortable height immediately.

Table top

In addition to the safety of the table top already mentioned, it should have dimensions that are optimal to those using it so that material is not wasted. The table top should be sturdy enough so that it can handle the required weight limitations. It could possibly be surface treated to prevent art markings, increase its aesthetic longevity and provide an easy way to clean it. The table should be smooth enough so that the texture of it does not appear when the artist is penciling on paper directly on top of the table.

Accessories

As the client desires, certain accessories can be added to the table afterwards. This includes holders for pens, pencils, paintbrushes, chalk or beverages in possibly separate compartments. If the user wishes, there could be a lip on all edges of the table so that materials do not roll or liquids do not drip off the table. Accessories, although should be the last thing added to the table, can be logically planned for ahead of time.

Portability and Stability

Depending on the floor surface, the table legs could include wheels with a mechanism to keep them from rolling. The dimensions of the table should be small enough to fit through standard size doors. In addition to the table top’s stability, the frame of the table should be strong enough not to wobble from lateral forces.