

## Crafting in Cardboard

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Located in Manhattan's Garment District, our non-profit organization, Adaptive Design Association, Inc., serves all of New York City. We design and build customized equipment for children with special needs, as well as offer training to make our concepts and techniques available to communities all around the world.

One of the most unique features of Adaptive Design's equipment is that it is mainly fabricated out of corrugated cardboard. We order the cardboard from a family-owned carton manufacturing company in Long Island City and use up to 300 4' x 8' sheets a year to make everything from easels to forward-tilt chairs to activity tables. Though cardboard isn't the only material that we use, it proves to be amazingly useful and practical. Not only is it inexpensive, lightweight, and easy to alter, but it also supports up to 1100 lbs. per square inch when constructed properly.

Our equipment is edged to seal the corrugation, and painted so that it looks inviting and child-friendly. The kids themselves participate in decisions about color and motifs.

The key element in Adaptive Design's creations is that each one is tailored to the individual needs of the user. Positioning is usually the first consideration when dealing with our young clients. When addressing needs like ventilators, feeding tubes and pulse oxygen monitors, additional consideration is necessary but we've found imaginative solutions for varying situations.

The projects range in price depending on the number of site visits, and equipment development and preparation time. Unfortunately, much of the equipment goes unpaid, and we are currently exploring ways to receive Medicaid reimbursement.

Keithan, for instance, who needs to use a ventilator, lived in an intensive care facility, and after meals he had to be propped up to prevent aspiration. The bumpers and pillows that the nurses used didn't furnish the solid support that he needed.

Using tri-wall cardboard, a utility knife, and a T-square, staff from Adaptive Design fabricated a crib chair on the spot, which provided him with firm back support and was angled slightly backward to prevent his tipping forward. It was the first time that Keithan could watch what was going on around him. The chair cost about \$240.

Owen's world has largely been his bedroom, where his schooling, therapy and family time take place. His spinal muscular atrophy makes moving him precarious because his pulse oxygen

continued, page 3



Keithan in his crib chair  
Photo property of Adaptive Design Association

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continued from page 1



Owen in his wheeled reclining seat  
Photo property of Adaptive Design Association

monitors, feeding tubes and oxygen feed need to accompany him. Adaptive Design devised a wheeled reclining seat with rear storage so he could be taken around the house and have more contact with his family.

Notches were cut into the headrest and storage space to provide channeling for Owen's tubing. To accommodate the unique contours of his back, Adaptive Design created a seat cushion with multiple compartments, each containing adjustable amounts of beanbag filler.

This was the third version of Owen's chair and necessitated multiple visits to his home, as well as office visits

**Adaptive Design** serves the five boroughs of New York City directly in order to meet the clients in person and conduct site visits for true customization. The organization serves other New York areas by offering monthly courses in cardboard carpentry and adaptive design to therapists, teachers and parents. It encourages Master's degree programs in occupational and physical therapy to integrate hands-on design fabrication into the curricula. [www.adaptivedesign.org](http://www.adaptivedesign.org)



The back of Owen's special seat  
Photo property of Adaptive Design Association

with his parents. The total cost amounted to \$6,000 and was covered by a combination of funds from the New York State Departments of Health and Education, grants, individual donors and Owen's parents.

Lilla's nasal feeding tube connects to a regulated dispensing pump that requires that her parents be present all the time to make sure that the tube isn't pulled out when she moves. Adaptive Design created a pushcart for the pump and storage for Lilla's toys. In addition to giving her greater freedom, the pushcart concealed Lilla's feeding pump. She loved not being able to see it. ▲



Lilla with her pushcart  
Photo property of Adaptive Design Association