

Part II:

Activities and Outcomes

WORK ACCOMMODATION CONSIDERATIONS AND STRATEGIES

The primary challenge for the designers at CRT was to create a workstation that would allow James to work more efficiently by providing easy access to tools, parts, catalogs and equipment. There are numerous tasks required in repairing even a single piece of equipment. In order to maximize efficiency James needed to perform as many tasks as possible from one central sitting area with minimal interruption. Designers evaluated the existing workspace and reviewed the various tasks and workflow issues that James faced on a daily basis. They also measured the dimensions of his chair, his viewing height and his reach.



WORK ACCOMMODATIONS

Each essential function was reviewed and the following accommodations recommended based on James's functional capacities.

1. *Provide customer service when taking orders and giving estimates.* James's speech is not affected and he is able to write with his left, previously non-dominant hand, although not with his prior speed or legibility. Accommodations were not needed for this function, although better organization and workflow did improve turnaround time and efficiency, factors in customer service.
2. *Complete paperwork and invoices on all repairs and estimates.* While James can perform this task, another employee often performs this function since James is slower and his time is better spent on more technical tasks.
3. *Disassemble the TV to perform diagnostics.* This first step in this task requires the TV to be lifted onto the workstation. This is "carved" out of his job duties and performed by another employee. The second step requires the removal of screws that attach the back cover of the TV set. The rehab engineer proposed a screwdriver orthosis to allow James to attach the unit to his wrist with Velcro, without having to grasp it, and to activate it with pressure, without having to pull the trigger. It also had a magnetic tip to prevent the screws from falling once removed. The splint would allow James to place the screwdriver in its charger and remove it with the right hand. James elected not to use this device, indicating he was more comfortable with a regular screwdriver and didn't want the extra step of putting it on and off. A simple tray is now used to catch the screws and prevent them from rolling off the table.

4. *Set up and operate the diagnostic equipment to determine type and extent of the defect.* The centerpiece of CRT's solution is a "U" shaped workstation, which provides convenient access to tools, equipment, parts and reference materials. The main work area has a **large 48" motorized turntable powered with a rotation lock** on which equipment to be repaired sits. Three 24" TV's can be positioned on the turntable at once while a switch spins the turntable and allows James to work on all three units without assistance in moving them. Four mirrors are positioned above and below the backside of the turntable allowing James to see the screen while working on the interior of the unit.

Mounted to the left of the turntable is his **diagnostic equipment, which can be moved on a trolley that runs overhead.** The electronic diagnostic tools are plugged into a metal box, measuring roughly 2'x1'x18" deep, and mounted on two rails that run along this portion of the workstation. An expandable extension cord allows James to grab the metal box and pull it to another area. Equipment too large to fit on the turntable is placed on a hydraulic jack table by the 'U' shaped workstation. James can reposition the diagnostic equipment to work on larger TV's, as necessary. A magnetic tool caddy sits just below the turntable along with racks and rechargers for power tools.

5. *Repair equipment using hand tools and electronic equipment.* The middle of the workstation holds a series of **rotating parts and tools bins.** These 36" bins were ordered from an industrial parts catalog and allow James to access a large number of tools without taking up workstation space. Two 6" plastic bins with drawers hold parts such as electrodes, diodes, and commonly used parts. The rehab engineers took 4 units of drawers and mounted them in a square on a turntable. This was repeated, providing a total of 8 drawers.
6. *Access information on TV models from reference materials in books and on microfiche.* The left side of the unit is for reference materials with two additional rotating **file carousels and a microfiche viewer.** These file carousels hold catalogs and reference materials not available on microfiche. An area for chemical storage was made on the left-hand side as well.
7. *Complete all paperwork, including business records and payroll.* Again, James can perform this task without accommodation. He uses a computer to perform parts of this function, similarly to most other business owners.

A number of other features were included in the workstation as well.

1. A laminate on the work surface dissipates static to prevent damage to the electronics while being repaired.
2. Elevated, tilt-in-space, clipboard displays equipment schematics in any convenient location.
3. Task lighting.
4. Multiple power strips and cable guides.

Case Study Training Module - Television/VCR Repair

5. Burn-in-area allows space for long duration diagnostic tests.
6. Over \$1000 in diagnostic equipment.
7. Vacuum and heat gun modification to allow ease of access. Vacuum is used to clean up the dust that accumulates on the inside of the TV and a clip was simply mounted to prevent the hose from falling. Handle modifications were also made.

In addition to the workstation CRT made other recommendations and improvements to his workspace as well including: grab bars for the bathroom, a handle modification for his lift truck and a grasping orthosis for working with specific tools.

The total cost for the project was approximately \$27,000, an investment that has allowed James to enjoy greater productivity and a more comfortable work environment for the last 10 years, and for many years to come.



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