

**Ergonomics in the Classroom®\***  
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Since children spend a lot of time at school sitting in chairs at tables or desks, it is important to consider means for ensuring comfort, efficiency and safety in seating. Classroom furniture that is the right size is critical for good ergonomics, however, this is a special challenge considering that the sizes of children vary among students at each grade level, and also change as the school year goes by. Planning for the range of sizes needed for each classroom at the beginning of each school year, as well as making adjustments mid-year, can help to ensure that students are positioned correctly. Unfortunately, a majority of elementary school-aged children are sitting in chairs and at heights that are the wrong size for their bodies.

Appropriate posture and position for listening to classroom instructions, copying assignments, reading from books and computer screens and managing written tasks not only increases efficiency of work, but also helps to prevent muscle cramping, joint pain and potential injuries. In addition, appropriately fitting classroom and office furniture has been found to decrease neck, shoulder and back pain, and improve sitting and standing postures. This contributes to decreased kyphosis (round shoulders), scoliosis (sideways curvature of the spine) and lordosis (sway-back) and allows for increased muscle strength. The decreased strain in the muscles has been shown to result in improved academic scores.

Sitting places more pressure on the spine than standing. Leaning forward over a desk to write, or over a keyboard, results in excessive bending of the neck with flattening of the low back. These positions can result in muscular strain and pain. A beneficial seated position is one with both feet lightly flat on the floor, ankles at 90°, lower leg vertical, thigh fully supported to within an inch or more of the back of the knee, hip at a little over 90° open angle (95-100 °) which relieves the pressure on the spine, and neutral low back and neck curves. Shoulders should be in their relaxed position.

The first requirement of properly supportive seating and tables is that they are easily height adjustable for each individual child. The adjustability of the chair enables feet to be flat on the floor, and the adjustability of the tables allow for the top of the thighs to clear the underside of the table, and for the elbows to be at an angle which allows the shoulders to be in their neutral position. If chairs are available that can be height adjusted easily (e.g. office style task chairs) then other supports such as a box or stool can be placed under a child's feet if needed.

The seat of the chair may tilt forward slightly, which promotes a natural low back curve without needing a built in lumbar support. The angle of the seat chair to seat back should allow for a greater than 90 ° hip angle, and have a surface texture which provides some friction to discourage sliding down in the seat - particularly if the seat tilts towards the front.

The front of the table should tilt up and back (approximately 10°) to promote a more upright posture of the head and upper trunk, through the position of the hands and eyes.

Consideration of work tasks is also important. Body alignment for working at a desk or table varies than that needed for working with a hand-held device, reading a book or collaborating with peers. Rocking chairs provide a nice option for these types of activities

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