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# Unit 6: Safe Loading and Transportation of Children Using Adaptive Equipment

## Overview

Unit 6 is a one-hour workshop on safety procedures for children using wheelchairs, safety seats, and other adaptive equipment. It takes place partly in a classroom and partly on a bus equipped with a lift and wheelchair positions. Hands-on practice in wheelchair safety procedures is an essential part of this session.

It is recommended that the classroom portions of Core Content sessions 6.1 – 6.5 be completed before moving drivers to a bus for the wheelchair loading and securement demonstrations and practice (Activities 6.2, 6.3, and 6.4, and Optional Activity 6.5). At the conclusion of the on-the-bus activities, drivers should be brought back into the classroom for the unit Review (Core Content 6.6).



## Unit 6 Framework

<p style="text-align: center;"><b>Core Content Outline</b></p> <ul style="list-style-type: none"><li>6.1. Unit 6 introduction</li><li>6.2. Lift use</li><li>6.3. Wheelchair securement</li><li>6.4. Safety seats, vests, and harnesses</li><li>6.5. TLC driving</li><li>6.6. Unit 6 review</li></ul>	<p style="text-align: center;"><b>Objectives</b></p> <p>By the conclusion of this unit, drivers will be able to:</p> <ul style="list-style-type: none"><li>1. Explain why loading and transportation of children in wheelchairs and other adaptive equipment requires attention to detail, patience, caring, and the willingness to ask questions.</li><li>2. Use the lift to load and unload wheelchairs following proper safety procedures.</li><li>3. Secure a wheelchair in a bus following proper safety procedures.</li><li>4. Secure a safety seat into a bus seat following proper safety procedures.</li><li>5. Explain the importance of TLC driving when transporting children in wheelchairs.</li></ul>
<p style="text-align: center;"><b>Suggested Time</b></p> <p style="text-align: center;">60 minutes</p>	<p style="text-align: center;"><b>Preparation</b></p> <ul style="list-style-type: none"><li>1. Review Best Practice Backgrounders regarding lift use, wheelchair securement, safety seats and other adaptive equipment, and TLC driving.</li><li>2. Arrange for a lift-equipped bus, wheelchair, and safety seat for the on-the-bus activities.</li><li>3. Projector, screen, and PowerPoint in place.</li></ul>

**UNIT 6.1**  
**CORE CONTENT**  
**Unit 6 introduction**

**BEST PRACTICE  
BACKGROUND**

**Driver qualifications.** Drivers transporting children using wheelchairs and other adaptive equipment must possess specific knowledge and skills.

Safety Restraint Systems, and other mobility devices and adaptive equipment are constantly changing. Keeping up with current manufacturer recommendations means training in this topic is never finished.

**The importance of adequate securement of all equipment during the bus ride.** All adaptive equipment should be adequately secured during the bus ride. For instance, walkers and crutches should be strapped to the floor or a bus seat, or placed in latched compartments.



Wheelchair loading and securement is rapidly changing. Drivers and aides must be willing to ask questions. For instance, when the bus arrives at a child's stop in the morning and the child comes to the bus using a new type of walker or new wheelchair, the driver and aide must take extraordinary care to make sure the

new equipment can be safely loaded and secured.

- Attention to detail is needed because there is little room for error when transporting children using adaptive equipment such as wheelchairs. Often, such children have pre-existing physical or medical problems that increase their risk of injury during a bus ride. Equipment used to load and secure children in wheelchairs or safety seats can be very complicated to operate. Even a small error can result in a tip-over or injury.
- Patience is required because it often takes extra time to properly load and secure children using adaptive equipment.

**Constant change.** Supervisors, trainers, drivers, and aides all need to be aware that wheelchairs and wheelchair securement systems, Child

**Instructional Strategies**

**Discussion questions**

- ✓ *What qualities are required in a bus driver transporting children using adaptive equipment?*

**PowerPoint**

- ✓ *Slide 6.1: "Safe Loading and Transportation of Children Using Adaptive Equipment"*

**Workbook**

- ✍ 6.1

**UNIT 6.2**  
**CORE CONTENT**  
*Lift use*

**BEST PRACTICE  
BACKGROUND**

Modern wheelchair lifts are safe, but they require those operating them to pay careful attention. Children riding in wheelchairs have been seriously injured when they fell off the wheelchair lift. Drivers and bus aides should be familiar with the lift manufacturer’s instructions.

**Safety procedures for lift use:**

- A **safe loading zone** must be determined before the lift is lowered. The area should be level and smooth. Curbs and other obstacles must be avoided.
- The driver must set **parking brake** on both hydraulic and air brake vehicles. Unsecured buses have rolled off while the driver was out of the seat.
- When opened, the **lift door must be secured** so it can’t swing against the lift.
- To alert pedestrians, some bus drivers mark off the loading zone next to the bus with 2 small **traffic cones**.
- Driver or aide must check that the **student’s wheelchair lap belt** is secured before the chair is placed on lift.
- Once on the lift, students must keep **hands on their laps** to avoid being pinched in the lift mechanism.
- **Head clearance** must be checked as student moves through lift door.
- On the lift, the wheelchair should be **positioned close to the bus**, facing out.
- If the lift is equipped with a **safety belt**, it must be

fastened before lift is raised or lowered.

- As an extra safety measure, either bus aide or driver must have their **hands on the wheelchair** at all times while it is on the lift. As the lift is raised or lowered, one adult should “hand off” the chair to the other.
- **Wheelchair brakes** must be set.
- While lift is operated, **no one should stand directly under or in front** of it.
- The **“Safety Lip”** at the front of the lift must be in the raised position.
- Most important: **adults operating lift must avoid distractions** until child is safely boarded or discharged. For instance, conversations should be put on “pause” until the child is safely off the lift.
- **Close and secure lift** and door as soon as child has boarded or discharged. Lift

should be fully stowed at once. Many bus drivers have driven off with the lift still out.

**5 mistakes to avoid.**

1. Any distraction while operating the lift.
2. Drivers or aides riding the lift with the child. This is very dangerous and can exceed lift capacity.
3. Children riding lift standing up. A child can easily fall. If the child can’t walk up or down bus steps, a “loaner” wheelchair should be arranged for boarding and exiting the bus.
4. Adults operating the lift with dangling jewelry, clothing, or long hair, which could be caught in the lift mechanism.
5. Allowing children or untrained adults to operate the lift machinery.

**Instructional Strategies**

**Discussion questions**

- ✓ *How do injuries occur during use of wheelchair lifts?*

**PowerPoint**

- ✓ *Slide 6.2: “Lift Use - 5 Mistakes to Avoid.”*

**Activity**

- ✓ *See Activity 6.2: “Lift Use Demonstration and Practice”*

**Workbook**

- ✍ 6.2

UNIT 6.3  
CORE CONTENT  
*Wheelchair  
securement*

**BEST PRACTICE  
BACKGROUND.**

**Wheelchair securement is challenging.**

- Securement systems can be complicated. Securement equipment can be tricky to operate, especially in the tight spaces on buses.
- Wheelchairs come in many designs and sizes. Finding suitable securement points can be difficult.
- Even “small” securement mistakes can result in a wheelchair tipping over during the bus ride. Many children have been injured in such incidents.

Attention to detail is critical when securing wheelchairs. Hands-on practice in proper securement procedures is a must. Even experienced staff must avoid becoming complacent.

**Securement systems.** All school buses built in the U.S. since January 17, 1994 are designed to transport wheelchairs in a forward-facing orientation using a four-point securement system. Drivers using older buses should check with their supervisors to be sure they understand how to use older securement systems.

There are many wheelchair securement systems in use and each manufacturer’s design is different. Even a single manufacturer’s system changes a great deal from year to year. It is imperative that drivers and aides review the manufacturer’s instructions for the system they are using, which should be posted in the bus. In addition, manufacturers provide free training videos to schools using their equipment, and drivers and bus aides should view the appropriate video for their system.

**Securement tips.**

- Securement straps should be attached to points on the main wheelchair frame, preferably near welded joints, and near passenger seat level so straps are at an approximately 45 degree angle to the floor. Straps should never be attached to removable or folding components, or the wheels. (Securement points can be marked with colored tape.)
- It’s easiest to attach the least accessible strap first and then work around the chair. Straps must be tightened so the chair won’t move on the floor.
- Failing to use the lap – shoulder restraint could result in a child falling out of the chair and being badly hurt. Lap – shoulder belts can be awkward to fasten.
- Sensitivity to the child is called for when fastening belts, etc. As much as possible, children should be involved in the securement

process. Many can help attach belts, set brakes, etc.

**Lap trays.** For children’s safety, wheelchair lap trays should be removed and safely secured during transport. Parent and school approval is required.

**Electric wheelchairs.** Children should not be allowed to operate their chair’s “joystick” while on the lift or in the bus. Batteries should be disconnected during the bus ride.

**Shake test.** When all straps are secured, a “shake test” to check tightness must be conducted before the bus moves. After alerting the student, the driver or aide should try to gently but firmly move the wheelchair. Wheelchair brakes should not be set until after the test so poor securement is not disguised. Securement must be monitored during the bus ride, too. Wheelchairs that tip over often do so during the ride, not right at the start.

**Instructional Strategies**

**Discussion questions**

- ✓ *Why is wheelchair securement challenging?*

**PowerPoint**

- ✓ *Slide 6.3: “Wheelchair Securement”*

**Activity**

- ✓ *See Activity 6.3: “Wheelchair Securement Demonstration and Practice”*

**Workbook**

- ✍ 6.3

**UNIT 6.4**  
CORE CONTENT  
*Safety seats, vests,  
and harnesses*

**BEST PRACTICE  
BACKGROUND**

According to the National Highway Traffic Safety Administration, a seat belt is insufficient for preschool aged children weighing less than 50 pounds. A federally approved age and weight appropriate child safety seat or other restraint system must be utilized.



**Unapproved seating devices such as infant feeding seats, Tumble Form positioning seats, strollers, and Booster seats are not permitted.**

**Difficulty of using safety seats in school buses.** Safety seats must be installed according to the manufacturer's instructions. The bus seat belt must be threaded through the safety seat exactly as directed. Instructions are included with safety seats.

Adequately tightening a safety seat in a school bus can be difficult. Because school bus seat backs and cushions meet at nearly a 90-degree angle, some types of safety seats won't fit properly. Bus seat cushions also have less "give" than passenger car seats, and it's harder to depress the safety seat into the bus seat cushion to draw the seat belt tight. Leaning or kneeling on the safety seat as the seat belt is tightened may help. Limited space between school bus seats makes this difficult too.

**Safety seat securement tips.**

- Safety seats should be installed and tightened adequately before children are picked up.
- It often takes two people to adequately secure a safety

seat in a school bus. One person places his or her full weight on the safety seat while the second tightens the seat belt.

- For very young children, less than 20 pounds, rear-facing safety seats must be used. They must be installed according to the manufacturer's instructions.
- Children between 20 and 50 pounds AND over one year old with adequate upper body strength to sit up should ride in forward facing safety seats.
- For larger children, once the child's ears are higher than the top of the safety seat the child needs to ride in a special seat designed for older or heavier children, or in another approved Child Restraint System such as a safety vest or harness.
- Vests and harnesses should have a "crotch strap" to prevent children from

sliding down and choking.

- Most booster seats are inappropriate for school buses. Only booster seats that have a separate child securement harness should be used.

Children with special needs riding in safety seats, vests, or harnesses should be monitored during the ride. "Anything can happen" with young children.

Do not place safety seats next to emergency windows or exits.

Soft foam padding or pillows should not be used to keep a child upright. Soft padding may compress under the child's weight and the seat could become loose. If necessary, tightly rolled-up towels can be placed next to children as support.

**Instructional Strategies**

**Discussion questions**

- ✓ *Why is it difficult to tighten safety seats adequately in school buses?*

**PowerPoint**

- ✓ *Slide 6.4: "Safety Seats"*

**Activity**

- ✓ *See Activity 6.4: "Safety Seat Securement Demonstration and Practice"*

**Workbook**

- ✍ 6.4

**UNIT 6.5**  
**CORE CONTENT**  
*TLC driving*

**BEST PRACTICE  
BACKGROUND**

**Vulnerable passengers deserve special driving skills.** Because many children using wheelchairs already have physical or medical disabilities that make them more vulnerable to injury, bus drivers who transport children in wheelchairs must employ exceptional defensive driving skills at all times. For instance, children lacking upper body strength and control, or children with brittle bone syndrome, could be seriously injured merely by the bus hitting a bump too hard or taking a turn too fast.

Unfortunately, on many school buses the wheelchair positions are located in the very rear of the bus, where the effect of bumps and turns is magnified.

**Tender Loving Care (TLC) driving skills.**

- Smooth starts, stops, and turns are the mark of a professional bus driver. (One bus driver experienced at transporting vulnerable children said she drives “As though there were eggs under the accelerator and brake pedals.”)
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- Anticipating potential hazards is the key to defensive driving, and minimizes the need for sudden evasive maneuvers.

- Hitting speed bumps too fast can be especially dangerous for children riding in wheelchairs in the backs of buses. A bump may hardly be noticeable to the driver in the front of the bus, but the “catapult



effect” at the rear of the bus can violently shake a child.

- Rushing is dangerous for bus drivers transporting children with special needs

and conditions. Rushing erodes defensive driving skills. School bus drivers transporting children in wheelchairs and other adaptive equipment should be the most deliberate and cautious drivers on the road.

- In recent years, “Special Needs Bus Rodeos” have included a “TLC Driving” event to evaluate driver skills at smoothly maneuvering a bus over bumps and through tight turns. Special measurement devices have been developed to judge driver skills in this critical area.

**Instructional Strategies**

**Discussion questions**

- ✓ *What is TLC driving?*
- ✓ *Why is it important for bus drivers transporting children in wheelchairs to practice TLC driving?*

**PowerPoint**

- ✓ *Slide 6.5: “TLC Driving”*

**Optional activity**

- ✓ *See Activity 6.5: “TLC Driving”*

**Workbook**

- ✍ 6.5

UNIT 6.6  
CORE CONTENT  
*Unit 6 review*

**BEST PRACTICE  
BACKGROUND**

Wheelchair loading, securement, and transportation require a high degree of skill and caution on the part of drivers. This unit introduced drivers to basic safety procedures in these areas, and allowed them to practice the procedures for themselves.

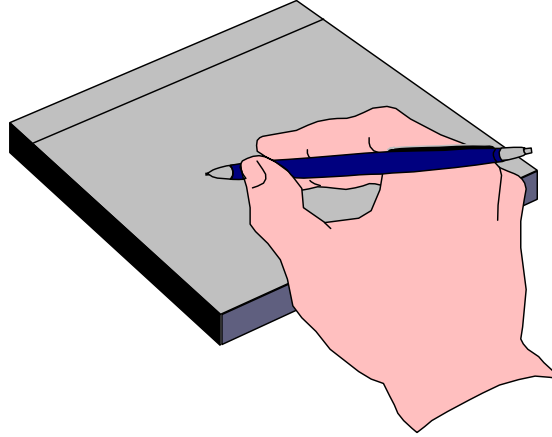
**Importance of reviews after on-bus practice.** A review after the on-the-bus session is essential, for new questions may have arisen during hands-on practice.

This unit addressed 4 important topics:

1. Lift use;
2. Wheelchair securement;
3. Safety seats; and
4. TLC driving.

Trainers should reiterate key points about each topic during the review. If time allows, displaying each topic's PowerPoint again is a good way to review and clarify the materials.

Class discussion of the five review questions help trainers to evaluate the extent to which the unit's main objectives were met.



**Instructional Strategies**

**Review questions**

- ✓ *Why does loading and transportation of children in wheelchairs require vigilance, patience, caring, and the willingness to ask questions?*
- ✓ *Describe procedures for safe lift use.*
- ✓ *Describe procedures for safely securing a wheelchair in a bus.*
- ✓ *Describe how to secure a safety seat into a bus seat.*
- ✓ *What is TLC driving and why is it important when transporting children in wheelchairs?*

**PowerPoint**

- ✓ *Slide 6.6: "Unit 6 Review"*

**Workbook**

- ✎ *6.6*