# IT LOOKS SO Easy

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From the time a child is old enough to observe the world around him, he is preparing for the most difficult thing he will ever do. Driving looks so easy, but it is the most complex functional activity of daily living that the average person ever performs. There are three basic components to driving. First is the physical control of the vehicle. Second is vision or how well we see. Third is how our brain interprets the visual input, processes the data and tells our muscles how to respond. Therefore, what we perceive to be an activity requiring only good vision and good reflexes is in fact cognitive in nature.

As a child progresses through the various normal developmental stages, he or she is storing valuable information and memories he or she will draw from later in life. What we call play in the form of running, riding a bicycle and participating in sports is actually providing a child with valuable experiences that are stored in the long- term memory area of the brain. Children who have physical disabilities alone are able to experience most of these activities through wheelchair sports or modifications to toys. However, if the child has impairment in visual perceptual skills or higher level cognitive functions, with or without physical involvement, he or she often does not have the opportunity to participate in these basic developmental activities.

One of the higher level cognitive functions that is absolutely critical in driving is termed "divided attention". This enables us to be aware of multiple things that are happening simultaneously. We must have the capability to observe, intrepret, store in short- term memory, monitor and retrieve such things as traffic patterns, road conditions, speed of vehicles, signage and the rules of the road in a continually challenging environment and to do it in a fraction of a second. It takes the average driver three-fourths of a second to react, think and apply the brakes. Impairment of divided attention is one of the most common reasons an individual is unable to drive.

When normal development does not take place and a child is unable to gain these experiences in the first 15 years of life, we are sometimes called upon to attempt to "crash course"(a term we do not like in driver education) behind the wheel of a car.

Fortunately, for most children, these limitations are not a factor, and they develop normally. Even with normal development, the central nervous system, consisting of the brain, spinal cord and peripheral nerves, does not mature until the late teens or early to mid- twenties. It continues to refine until about the age of forty. With this in mind, we have to remember that we are attempting to teach an individual the most complex of all tasks approximately three to six years before they have fully developed neurologically! Now, how are we supposed to do that?

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We do it through another cognitive skill called learning. Learning is different from improvement. Learning is a permanent change in behavior as a result of experience or practice. Improvement may only be temporary. Another cognitive skill is called generalization. It is the ability to apply previously learned skills to a variety of similar skills in new environments. There are several things that can affect one's ability to learn. Learning is influenced by both internal and external factors. Internal factors include whether a person has ever performed that task before and/or if the task is even within his or her capability. External factors are those that increase the amount of complexity or decrease the predictability of the task. Complex tasks with a high level of unpredictability, such as driving, will demand elaborate information-gathering and processing capabilities.

There are three sequential stages of learning. The first stage is the cognitive stage. This is what we see when a student tries to apply the book knowledge they gain in the classroom to the driving environment. When individuals first get behind the wheel of the car, they have to think through each step of the driving process. They rely heavily on their vision and verbal feedback from the instructor. They may also tend to verbalize to themselves or others the sequence of steps that make up the task. Second is the associative or intermediate stage. At this point the student has learned the most effective way of performing the task and begins to refine movements. We see this in driving when the student progresses to multiple- lane streets with heavier traffic, where he or she is beginning to recognize signage and is able to approach and complete turns without difficulty. Students rely on their vision and verbal feedback and begin to use proprioceptive feedback. Proprioception comes from sensory nerves located inside the joint that tell us what position our limbs are in and incorporates movement that become a learned task. Practice is of primary importance during this stage. This is the stage in which they begin to draw from their long-term memory and apply all those experiences learned as a child. The third stage is the autonomous stage in which the skill is under proprioceptive control and has become largely automatic and habitual. They are in the final stage of driver training and are incorporating all the skills necessary, relying less and less on others to perform the task for them. The student begins to adjust to higher speeds and learns to anticipate situations before they develop. The driver can eventually perform most of the skills without thinking about them. Performance is also less subject to interference from other environmental distractions. This is a process that continues not just though the early years of driver training, but in every day we drive for the rest of our lives.

Driving is one of the most complex things which we will ever do. Our bodies were designed to be prepared for this type of activity; however, sometimes we take driving for granted. What on the surface looks so easy is very, very difficult. It takes all of our physical and mental capabilities that are innate to most of us to safely perform this task we call driving.

# IT LOOKS SO **Easy** *(Continued)*

Providing behind-the-wheel instruction and training to the physically and cognitively challenged driver is what sets the Driver Rehabilitation Specialist apart from both the generalist therapist and the traditional driver education instructor. In 1977, the founding members of the Association for Driver Educators for the Disabled (ADED) came primarily from these two professional backgrounds after realizing there was a void in meeting the needs of individuals that they separately worked with within their respective practices. While the therapist knew the characteristics of the medical conditions, they did not know the techniques for teaching a person to drive. On the other hand, the driver educator knew the techniques, but did not necessarily know how to apply them to someone with a medical condition. Through communication, cooperation and education, ADED was formed to create the hybrid specialists we now know as the Certified Driver Rehabilitation Specialist.

Over time, the membership has shifted heavily to those from the medical/rehabilitation background. This shift has resulted in an emphasis on clinical evaluations at the Annual Conference with a gradual reduction in opportunities to learn driver education techniques needed to safely train the patients/clients seen on a daily basis. While there is no substitute for being trained as a professional driving instructor and it is certainly highly recommended, not all states require that a therapist hold that certification in order to provide behind-the-wheel training. Anyone entering this field should first know what their respective states or provinces require as the minimum certification for offering behind-the-wheel evaluations and training.

# Developing the Initial Ability to Drive

Before a behind-the-wheel evaluation or follow-up training can be effective, we need to have an understanding of what the CDRS should be looking for. The starting point for any driver education program is realizing that we are asking the driver to do something that they have never done before. ***Driver habilitation*** would be *developing the initial ability* to drive. The progression through normal, childhood developmental milestones such as running, riding a bike, participating in sports, crossing the street as a pedestrian, etc. helps prepare us for the most complex Activity of Daily Living that most of us ever perform. A teenager learning to drive with this practical experience does not generally require the CDRS expertise. Even then, there is a significant learning curve, requiring many hours of behind-the-wheel experience before they are considered independent. When a child, due to a physical or cognitive impairment cannot or chooses not to participate in these activities that we call "play", they are at a significant disadvantage when they get behind the wheel of a vehicle. It is at this point that the CDRS is sought out by the teenager or young adult. *They would not be coming to us if they did not require our expertise.* Our training must be consistent and systematic in order to provide an opportunity for any inexperienced driver to become independent. ***Driver rehabilitation*** would be *restoring the ability that was lost*. Even if you do not work with inexperienced/novice drivers, a change in the physical and/or cognitive function of an experienced driver caused by a medical condition may require that they perform the act of driving in a way different from the way it was originally learned. Slowed cognitive processing or decision making requires us to teach alternative techniques. Paralysis or amputation, as examples of orthopedic change, requires us to retrain the brain from sending the message to the right foot for gas/brake operation as originally learned, to sending the message to the left foot or hand when using adaptive equipment. Simply describing to or showing persons how to use adaptive equipment is not adequate. They should be systematically trained in all routine driving scenarios in order to demonstrate independence in driving.

*"In all cases of behind-the-wheel training, the core function of driver education/rehabilitation is that we are training the **brain** to do something it has never done before or to perform it in a way different than originally learned."*

# FOUNDATION SKILLS OF DRIVING

- **Steering**
- **Accelerating**
- **Left turns**
- **Backing**
- **Reading the terrain**
- **Parking (angle, perpendicular, parallel)**
- **Braking**
- **Lane Positioning**
- **Right turns**
- **Use of turn signals**
- **Use of mirrors**
- **Checking the blind spot**
- **Changing lanes**
- **Decision making**

Just as the name implies, the task of driving is founded on and built from these basic skills.

Each of these Foundation Skills has a technique that the inexperienced driver must initially learn and perform in order to be a safe, independent driver.

They are also the skills that must be maintained throughout the person's lifetime in order to remain safe and independent.

Regardless of the type of program you specialize in, i.e., inexperienced driver, TBI, SCI, or assessing the elderly driver, the behind-the-wheel evaluation and training should address these basic skills.

Some skill techniques teach how to perform the steps safely, others are expanded to include the legal technique. As a specialist, you are responsible for knowing and teaching the legal requirements of the technique based on your state or province licensing agency. Any initial driving test or re-testing after a change in the medical condition requires that the individual demonstrate proficiency in all of these skills.

It is one thing to make a list of skills that must be learned, but the next question is how to guide/train/educate the driver in either initially learning, or often in the case of an experienced driver, correcting a poor and illegal technique, while simultaneously incorporating an alternative technique or adaptive equipment. That moves us to the point of mastering the skill.

# IT LOOKS SO **Easy** *(Continued)*

## MASTERING A FOUNDATION SKILL

1. Develop a step- by- step technique (activity analysis). This is no different than a therapist who is teaching a stroke patient any alternative technique for one-handed cooking or teaching a spinal cord patient the technique for para or quad dressing. When challenged with a driver who just cannot seem to "get it", it is helpful to spend time analyzing how you as an experienced driver perform the skill. Look at every detail of the task from beginning to end, and write down each individual step. Repeat this over and over in a variety of settings to establish a consistent pattern. Remember to include every detail including following all legal parts of the driving task. Once the technique is determined, it should remain consistent regardless of the setting.
2. Have the patient learn each step individually (grading the activity). Break it down and add new steps as improvement is noted.
3. Be consistent with the steps in the initial setting (parking lot). Give verbal reminders (commentary driving) to establish the timing, directing visual reference points, etc.
4. Progress from fragmentation to fluidity. Gradually change from dictating each step to dictating groups of steps, then to occasional cues until the results are more fluid.
5. Apply the technique in new situations. As the patient moves from the parking lot to a residential setting, he or she will have a "drop" in the previously learned skill, and it may be necessary to resume verbal cueing. This is due to a change of scenery and increased visual stimuli, but most likely due to an increase in the level of anxiety the driver is experiencing. It is common that as each new environment is introduced, there will be another "drop" in performance.
6. Be consistent with the technique in all settings (residential, simple and complex multiple lane, and highway). As training progresses, make sure the patient is developing the correct habit of performing the technique. Do not accept a poor habit. That may ultimately result in failing a DMV road test.
7. Incorporate the technique without conscious effort. At some point after many hours of training, if the driver is to become independent, he or she must progress from concentrating on each individual step of a technique to incorporating the entire technique into routine driving scenarios without conscious thought. This is when the driver begins to be more comfortable and confident. Don't forget that this also happens with a cognitively intact, experienced driver using adaptive equipment as well as the driver with cognitive challenges.
8. Mastery achieved.

*"The situation may change, but the technique never does"*

## SETTING THE MIRRORS

There are different opinions regarding how to set mirrors. One of the current trends is to set them to attempt to alleviate the blind spot. The more traditional thought is to set them where the driver can see the side of the car for a visual reference point, then teach the driver how to check the blind spot.

Place your hand on the rear quarter panel above the rear tire. Have the driver adjust the mirror to see your hand on the car, but not the entire side of the vehicle.

Ask if the car "looks level" with some of the street and some sky visible.

Have them verbally tell you what they are seeing. This is both a double check, and it introduces them to looking in the mirrors.

Repeat for the right side mirror.

## CHECKING THE BLIND SPOT

(Activity for after the mirrors are set correctly)

**INSTRUCTIONS TO THE DRIVER**

1. Look only in the rearview mirror until they see you move to the side of the vehicle.
2. When they can no longer see you in the rearview mirror, look in the side mirror to maintain visual contact.
3. When they can no longer see you in the side mirror, have them tell you to 'stop'.
4. Explain that even though the blind spot looks small, an entire vehicle can be hidden from view if they do not check the blind spot before changing lanes.

**TECHNIQUE**

Roll the window down to provide communication between the driver and instructor.

The instructor positions 30-40 feet directly behind the vehicle.

Verify correct adjustment of the rearview mirror by making visual contact with the driver.

The instructor slowly walks toward the rear bumper and simulates a lane change to the driver side approximately 20 feet from the bumper. Be sure the driver is visually tracking your movement.

Be ready to stop when they tell you.

At this point, if all mirrors are correctly adjusted, you should be standing 3- 5 feet away from and perpendicular to the rear tire. THIS IS THE BLIND SPOT.

Have the driver turn his or her head 90 degrees until they can see you in their peripheral vision. They should not turn their body or shoulders, only their head. If they turn their body to look behind them, they are more likely to move the steering wheel, therefore losing lane position.

Repeat on the passenger side.

# LANE POSITIONING

Lane positioning is one of the most critical skills that a driver must develop. It is important to begin working on lane positioning while in the parking lot setting. Using "target blocks" is a good compensation technique to teach an inexperienced driver how to identify his or her visual reference point. Remember that it is especially important to teach positioning for entrances and exits in a parking lot to prevent blocking other drivers and/or turning too wide into the parking lot.

It becomes increasingly more critical as the driver progresses from simple to complex settings.

There is little room for error. As an inexperienced driver begins to check mirrors and the blind spot, there is a tendency to look too long in the mirror and lose focus on lane position.

Weaving or drifting in the lane may be due to visual perception, depth perception, cognitive, or general lack of awareness deficits. You must be able to discern what is causing the drifting in order to address the repositioning.

If a person cannot correct the deficit, driving may not be a safe option.

You must be ready and able to intervene. Your timing for intervention and control of the steering wheel from the instructor seat is critical.

Some compensation techniques that I have found successful include "walking down a hallway", using a "target block" in a parking lot, "oil slick or tire tracks" and "hood ornament" on multiple lanes. Some of these can be used simultaneously during the training session.

## Walking Down A Hallway

Use terms and concepts a new driver is familiar with. Remind them that when they are walking down ahallway in a building, they stay on the right side of the "imaginary line" down the center. Ask: "If you walk on the left side, what will happen?" (They always get the right answer.) This gives them a concrete reference point to begin training for lane positioning.

## Target Blocks

An inexperienced driver will drive towards what he or she is looking at. This is a common phenomenon since because they don't want to hit a curb, a tree, or another car they will visually focus on it. Because they are looking at it, they will drive straight for it. That is why saying, "Watch out for the car!" is not the best instruction to give.

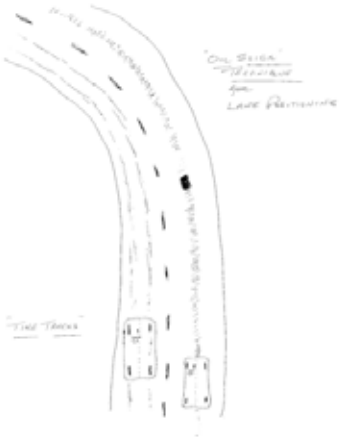
To teach a new driver where to look in the lane when completing a turn, start in an empty parking lot. Place a block of wood in the center of the lane ¾ of the way to the end. After making the sharp turn on a right turn or when looking

for the point of entry on a left turn, have the driver look for the wooden "target" and drive over the top of it.

This technique makes good use of the innate characteristic of a new driver aiming for (driving towards) what they are looking at. This concept of "finding the target" will be used later in training.

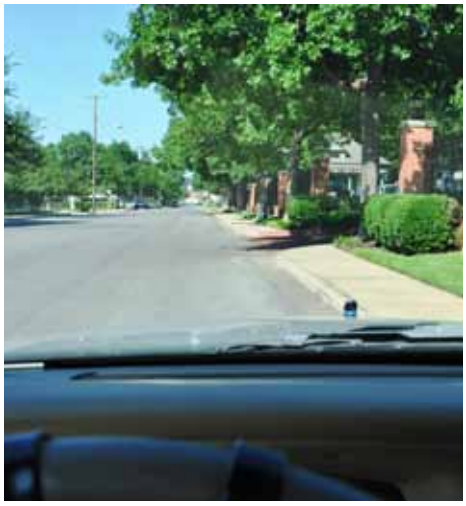
## Using a "Oil Slick" Technique in Lane Positioning

Since the accelerator pedal is just to the left of the center hump in the vehicle, have the driver keep his right foot (or shoulder in the case of no sensation or an amputation) on the left edge of the oil slick. This technique is effective whether going straight or on a curve.



## "Hood Ornament"

A large magnetic "chip clip" is a great temporary hood ornament. After you park the vehicle at the curb and the driver has properly adjusted his or her seat, move the clip from the front center of the hood toward the windshield. Have the driver tell you when the hood ornament lines up with the curb.



## Using a "Hood Ornament" in Lane Positioning

Once the driver establishes the correct lane position, have them sight past the hood ornament to see where it lines up in relation to the curb. It should be in the driving lane, just to the left of the curb. If the driver drifts to the right, they will be too close to the curb; if they drift to the left, they will be too close to the left diving line.