**BASIC BIOPTIC USAGE EXERCISE**

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***The following information is intended to compliment that which is provided in the TSBVI Step-by-Step Guide to Pre-Driver Readiness for Young Novice Bioptic driving Candidates re basic bioptic usage for future driving purposes. Please share with staff who will be involved in the direct teaching of bioptics for driving.***

**Providing basic on-foot (parking lot) training to VI students with the use of mock-up bioptic lens systems**

Before preceding further with an explanation of how I introduce students to the use of a bioptic lens system for driving (via first using a basic, on-foot bioptic training lesson), I would like you to get a hold of a copy of my ***TSBVI Step-by Step Guide to Reinforcing Pre-Driver Readiness Skills with Novice Bioptic Driving Candidates),*** available in both large and standard size print. Read it from cover to cover. And if you have any questions whatsoever, please call me @ (304) 767-1497 or e-mail: chuck\_huss@hotmail.com (h).

Note, a couple of years ago, an optometrist who has an established clinical low vison practice asked if I would send some materials and pointers re pre-requisites to passenger-in-car bioptic driving practices to one of her new office staff. A copy of my response is as follows:

During the first week of our 6-week in length WV bioptic driver training program (see course curriculum outline attached) for bioptic lens users, the emphasis of instruction is on learning or reviewing & reinforcing the use of 3 of Smith System’s most common distance viewing skills: i.e. ***Aim High in Steering*** (also known as eye lead or forward scan); followed by “***Keep your Eyes Moving***” or head and ocular scanning (i.e. home fronts on one side of the road vs. the other in a residential area, store front to store front on opposite sides of the road in a commercial area, and from homestead to homestead in a rural area) and “***Getting the Big Picture***” all around your vehicle, including an adequate following distance (a minimum of four (4) seconds for low acuity drivers). The emphasis, according to Smith System developers, is to give oneself adequate ***space***, which will give you adequate ***visibility***, that allows adequate ***time*** to make the appropriate driving decisions, if necessary, in terms of adjustments in speed or lane position due to critical objects or driving conditions, that one might be confronted with during the driving task. We also include a backing skills classroom session at the end of week one or teach to use the ***backing avoidance principle*** (driving through and pulling out vs. backing out).

At the beginning of week #2, we introduce all students to the concept and basic use of their dispensed prescription bioptic lens systems (***see and pre-read information presented in attached TSBVI Pre-Driver Readiness Manual, pages 16-24, large print copy***). What I do now with students, when training them on foot first in a parking lot situation is:

***Instead of walking ten (10) yard increments at a time, and facing one another, as we did years ago (whether training 2 vs. 15-20 students at a time like done in Austin, TX), I now line up two vehicles facing away & two facing forward towards students at the end of a large parking lot (see photo slide in TSBVI manual, pg.19). Be sure it is a quiet and controlled parking lot situation (preferably 80-100 yards in length).***

Then align students (taller ones in back, shorter ones in front, @ arms-length distances apart from one another (see photo slide in TSBVI manual pg. 20)

Then using the functional vision sheets (attached, and depending the power of various students’ dispensed Rx or mock-up bioptic lens systems, I will say ”***we are now approximately ten (10) yards or 30 linear feet from the back end of the parked cars, when you dip down slowly into the miniature telescopic unit, the back end of one of those vehicles will appear to be so many times closer, depending on the power of scope being used***” That is why I have included three (3) different powered functional vision sheets (2X-4X), attached for reference purposes.

Then as we back up at ten (10) yard increments, you can review or cover those optical and non-optical characteristics of bioptic lens systems as covered in TSBVI Pre- driver Readiness Manual; all the way out to 100 + yards from the four (4) parked vehicles.

***For example (using a 2.0X mock-up bioptic lens system and the 2.2X functional vision awareness sheet (shortened to 2.0X for these preliminary on-foot exercise purposes) I start walking off ten (10) yards (30 linear feet), align the students in formation as discussed above (note, beforehand, be sure that students with variable focus mock-up or RX bioptic lens systems have correctly focused the telescopic portion of such lens system to 20 feet or infinity before starting lesson) and say:***

1. “***Look directly at the back end of the inside vehicle that faces in the same direction as you are facing*** (third vehicle from the left, first photo above). Next, have student tilt their head back, so that they are viewing directly below or parallel with the bottom of the telescopic housing through their carrier lens. Now have student slowly tilt their head forward and view through the telescopic portion of their bioptic lens system.

Repeat this basic vertical spotting technique (head tilt back and then forward) five (5) times slowly (with an emphasis of “***squaring off***” with the general license plate area of the vehicle in question when engaging telescopic lens unit viewing).

At this short telescopic viewing distance, notice the impact that viewing through one’s telescope illustrates (i.e. the nearness illusion (bringing ones apparent view of the back of the vehicle in question 2X’s, 3x’s or 4X’s ***closer***; and only being able to detect and decipher parts of the back of that vehicle (dependent upon the power of scope being used, producing a significantly “***restricted field of view***”).

When one dips down into the 2.0X telescopic portion of their bioptic lens system at ten (10) yards, point out that “***the parked vehicle will appear to be approximately 5 yards or 15 linear feet away or a functional distance equal to the length of for instance of a mid-size car***” (you can use what type of vehicle approximates 15 linear feet in length).

1. ***Now let us back up and walk off an additional ten (10) yards from those vehicles (total of twenty (20) yards (equivalent to sixty linear feet).***

Repeat the same vertical spotting process above (five (5) times slowly).

“***When one dips down into the 2.0X telescopic portion of their bioptic lens system, you will appear to be approximately ten yards or thirty linear feet a functional distance equal to the length of for instance a “full-size U-HAUL or UPS truck” away***.”

“***What impact does doubling the linear distance from a known object/form, have on the breath of one’s magnified field of view through the telescopic portion of one’s bioptic lens system***”?

1. ***Now let us back up and walk off an additional ten (10) yards from those vehicles (total of thirty (30) yards (equivalent to ninety linear feet).***

Repeat the same vertical spotting process above (five (5) times slowly).

When one dips down into the 2.0X telescopic portion of their bioptic lens system, state “***you will appear to be approximately 15 yards or 45 feet away or a functional distance equal to the length of for instance “7 UP or Pepsi Delivery truck”*** (you can use what type of vehicle approximates 45 linear feet in length).

Once again, “***what transpires as one gets farther away from an object or form under scrutiny (breath of field of vision increases; you begin to see or decipher more of that object or form***).”

“***Now slightly bounce or elevate yourself up and down on the balls of your feet (padded area adjacent to one’s toes) to simulate rough roadway or road re-surfacing measures. What impact does such movement have on the clarity of objects or forms perceived through the telescopic portion of one’s bioptic lens system***”? Answer: reduced clarity of object or form perceived.

1. ***Now let us back up and walk off an additional ten (10) yards from those vehicles (total of forty (40) yards (equivalent to 120 linear feet).***

Repeat the vertical spotting process above (five (5) times slowly).

When one dips down into the 2.0X telescopic portion of their bioptic lens system, state “***you will appear to be approximately 20 yards or 60 linear feet away or a functional distance equal to the length of for instance a small tractor and trailer***” (again, you can use whatever type of vehicle approximates 60 linear feet in length).

Now have student(s) dip down and remain focused on the vehicle in question through the telescopic portion of their bioptic lens system. Instructor or other assigned staff person will then walk in a semi-circle direction (9 to 12 to 3 o’clock position); student is requested to point and follow gross outline of moving human form with one’s free hand & arm as the instructor or other staff person walks across student’s front 180° field of view. This portion of this exercise points out the benefit of ***vertex distance*** of a miniature telescopic lens unit (that is, the linear distance which exists between the center outside surface of one’s cornea and the optical center of the ocular end of telescopic unit; for establishing and maintaining gross awareness of space and objects/forms in one’s surrounding front 180 degree field of view, even during the limited time that one is using their telescopic lens unit).

1. ***Now let us back up and walk off an additional ten (10) yards from those vehicles (total of fifty (50) yards (equivalent to 150 linear feet, half the length of a football field).***

Repeat the same vertical spotting process above (five (5) times slowly).

When one dips down into the 2.0X telescopic portion of their bioptic lens system, and state “***you will appear to be approximately 25 yards or 75 linear feet away or a functional distance approximating the length of a full-size tractor and trailer***” (again, you can use whatever type of vehicle approximating 75 linear feet in length).

Have student(s) once again dip down and remain focused on the vehicle in question through the telescopic portion of their bioptic lens system. This time, instructor will walk slowly & laterally across student’s field of view at varying distances in front of student(s). When instructor’s presence is detected in student’s telescopic field of view (***experiencing a startling jack-in-the-box effect***), have student exit ***immediately*** out of the telescopic field of view to detect true linear distance of human form detected.

***Note, during the dynamics of driving task, the vertical spotting technique should only be engaged: for 1-2 seconds per fixation (fixation defined as the time as the user enters their telescopic field of view to the time the user returns to viewing through the carrier lens of their bioptic lens system), on straight stretches of roadway with ample sight distance, and in the absence of other road users in one’s surrounding space cushion.***

1. ***Now let us back up and walk off an additional ten (10) yards from those vehicles (total of sixty (60) yards (equivalent to 180 linear feet).***

Repeat the same vertical spotting process above (five (5) times slowly).

When one dips down into the 2.0X telescopic portion of their bioptic lens system, state “***you will appear to be approximately 30 yards or 90 linear feet away or a functional distance approximating the length of a full- size tractor and extra-long trailer***” (again, you can use whatever type of vehicle(s) approximating 90 linear feet in length).

As linear distance increases, instructor can inquire what features of the latter parked vehicles can be correctly deciphered (i.e., which vehicles are facing in which direction, which are cars vs. trucks, etc.). Here the instructor can introduce, review, or reinforce the concepts of functional visual acuity terms such as: awareness acuity vs. identification acuity vs. sure acuity. ***Awareness visual acuity*** refers to the furthest possible distance at which the presence of any form is first detected. ***Identification acuity*** refers the furthest possible distance at which a detected form is first correctly identified. ***Sure acuity*** or ***preferred viewing distance*** refers to the most comfortable distance for identifying a detected form. See appendix in TSBVI Pre-Driver Readiness Manual for additional information about these functional vision measures.

1. ***Now let us back up and walk off an additional ten (10) yards from those vehicles (total of seventy (70) yards (equivalent to 210 linear feet).***

Repeat the same vertical spotting process above (five (5) times slowly).

State “***when one dips down into the 2.0X telescopic portion of their bioptic lens system, you will appear to be approximately 35 yards or 105 linear feet away or a functional distance approximating the length of three (3) UPS trucks parked directly behind one another***” (again, you can use whatever type of vehicle(s) approximating 105 linear feet in length).

Instruct your student to dip down into their telescope, then scan laterally through their scope. “***What happens when student moves their head laterally while viewing through the telescopic portion of their bioptic lens system***”? Answer: magnified field of view moves in the opposite direction to head turn. “***What happens when student moves their head laterally while viewing through the carrier lens portion of their bioptic lens system***”? Answer: non-magnified field of view moves in the same direction as head turn. ***To prevent miscues with stationary objects or forms when head movement is engaged, it is encouraged that only a vertical spotting technique be incorporated for visual assistance with the driving task, under conditions previously indicated.***

1. ***Now let us back up and walk off an additional ten (10) yards from those vehicles (total of eighty (80) yards (equivalent to 240 linear feet).***

Repeat the same vertical spotting process above (five (5) times slowly).

State “***when one dips down into the 2.0X telescopic portion of their bioptic lens system, you will appear to be approximately 40 yards or 120 linear feet away or a functional distance approximating the length of two small tractor & trailer parked directly behind one another***” (again, you can use whatever type of vehicle(s) approximating 120 linear feet in length).

***The most common viewing angles, while driving, are located between 10:00 and 2:00 on a bird’s eye view face clock. From viewing distances of eighty yards or further, most bioptic lens users can determine or monitor (because the breath/width of telescopic field of view becomes greater at greater distances) what is happening in their immediate driving lane and an adjacent lane of traffic (same direction or opposite) to the left or right, as well as some types of activity or presence of parked or disabled vehicles or emergency situations happening in the far right disability lane.***

***After completing this parking lot lesson, and breaking for lunch to re-energize & relax their eyes a bit, I then take students out on a passenger-in-car (PIC) lesson:***

The PIC lesson revolves around incorporating a basic vertical spotting technique when positioned as a PIC on straight stretches of roadway (amidst residential , commercial, secondary, multi-lane highways, with wide grass mediums like you oftentimes have in a rural area, and interstate roadways), with adequate sight distance ahead, in the absence of other road users (in one’s blind spots, tailgating instructor and student, or amidst an oncoming closing position (within 3-4 car lengths in the adjacent oncoming lane); start with a request that student “***detect a lane of roadway, two adjacent lanes of roadway, the backs of large vehicles, outlines of green directional signs, or blue service signs***; ***looking out as far as possible and deciphering the curvature and number of lanes of a distant roadway ahead, making attempts to detect an added turn left or turn right lane, detecting whether an oncoming vehicle in the distance across the grass median is a car/truck; then over time, detecting and deciphering smaller in size road signs (i.e. yellow general warning signs, speed limit signs, regulatory signs (stop, do not enter, yield, no left turn, etc.) and finally traffic lights***”

 From this point forward (mid-week 2-6), instructors providing the PIC and/or behind-the-wheel (BTW) instruction for bioptic driving candidates; at this point you really need to get your hands on or borrow some driver education audio-visual materials (read, view, review then incorporate in) that include the full gamut of driver education materials (see back pages of course curriculum) exposing your assigned clients or students to:

* Review of Smith System’s five (5) Keys to Safe Space Cushion Driving (***Aim High in Steering, Keep Eyes Moving, Get the Big Picture around your Vehicle, Leave Yourself an Out, and Make Sure Others See You***)
* Critical objects and conditions (i.e., other road users, traffic control devices, and roadway characteristics)
* Use of blind spot checks and mirrors
* Lane changing
* Joining & leaving traffic formations
* Detecting high risk situations (traveling in dense urban areas, blind spot awareness skills, mirror usage skills, dual turn left lanes, stopped vehicles in your path of travel, night driving, etc.)
* Railroad crossings
* Construction site detection and awareness
* Merging skills on interstates
* Reading & interpreting Interstate signage (including GPS usage)
* Crash avoidance skills ([i.e](http://i.er). break & hold, steer left, steer right, accelerate)
* Use of anti-lock brakes
* Interacting with motorcycles
* Distractive driving
* Adverse weather
* Night driving (optional)
* Preparation for final on-road competency assessment
* Preparation for WV DMV on-road test for Class G/bioptic river licensure

***Provide a brief overview and coordinating the passenger-in-car (PIC) lesson with VI students positioned in the front right seat of their parent’s/grandparent’s/guardian’s vehicle, while parent drives around the rectangular shaped 3-4 mile in length route circumventing the TSBVI campus***

On Sunday morning, after Dr. Cindy Bachofer completes her “***Alternatives to Driving***” presentation as part of TSBVI’s In The Driver’s Seat Workshop, I then provide an overview of an active passenger-in-car lesson to students and their parents (conducted in-car after my brief oral presentation). This lesson affords students an opportunity to show their parents how well they can first see the general features of selected roadways (i.e., no. of lanes, shapes of intersections, curvatures in the roadway); other road users (i.e. anything on two or more feet or two or more wheels!); and then traffic control devices (i.e. pavement markings, various types of road signs, traffic lights, etc.). Using a prepared short in length PPT. presentation, I review the 3-4 mile in length route that parents will drive, while their child is positioned and participating as an active front right seat (commentary drive) passenger-in-car. The loaner bioptic lens systems previously dispensed to students for the on-foot parking lot lesson, are then re-dispensed to students at the start of the lesson, then re-collected from students immediately following the completion of this in-car PIC lesson. Those parents who elected to fly or use bus or train to arrive at the workshop will observe their child in the same capacity, while positioned as back seat passengers-in-car or vans provided by TSBVI. So the first time around the pre-planned route, while parents are becoming acclimated to the route (see attached route instructions), students will illustrate the use of distance viewing skills (see above and in TSBVI Pre-Driver Readiness Manual), then cue in on and verbally identify existing critical objects or conditions present (and how these can change every time the latter 4-5 mile in length route is driven); and then finally how they (students) can incorporate the enhanced vision provided by the telescopic portion of their loaner bioptic lens systems to detect and recognize the finer details of typical driving scenes (such as the color or color change of traffic lights, road signage, a distant road user about to enter or crossing their path, etc.). This past year if you will recall, we had quite an unusual situation happen on one of route trials (namely a pair of buzzards swooping down and picking up a recently killed squirrel from one of the lanes of roadway, included on our designated route).

**Providing a synopsis or summary of events that took place while conducting the PIC lesson**

After 5-6 times around this route of travel, students and parents return to the TSBVI conference room (where I will ask questions) and students and parents provide feedback regarding their in-car observations and experiences (both expected as well as unexpected). Students and parents are also requested to fill-out surveys re their experience(s) at this workshop. A synopsis is provided as to the importance of distance viewing skills, critical object awareness skills, and appropriate and correctly used basic bioptic usage skills.

Hope this helps. Enjoy.

Cordially,

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