

TX SenseAbilities

A Bi-Annual Publication about Visual Impairments and Deafblindness for Families and Professionals



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Faces of Fitness Blog

Bev Childress

The journey of how a woman with a visual impairment becomes a CrossFit trainer.

Blog article published with permission

Keywords: blind, visually impaired, health, CrossFit trainer



Bettina lifts weights during competition

A few weeks ago at a CrossFit competition at CrossFit Cleburne, I had one of “those” moments. It was a moment that left me in awe. It was an experience that brought up questions. Who, how, when? I just knew I shouldn’t and couldn’t pass up an opportunity to search out the answers. And if this moment was important and motivating and inspirational to me, chances are there were others that would feel the same way. If it isn’t inspirational to you, then you’re broken or dead.

This week’s Face of Fitness is Bettina Dolinsek. She is a 37 year old Health and Wellness Specialist at the Lighthouse for the Blind of Fort Worth. She has been married 17 years to her

wonderfully supportive husband Cody. She is also CrossFit Level I certified and is a competitive machine. And she is blind. She has become a force (I’m guessing she was a force before as well.) She has pit bull resolve and doesn’t let the unknown slow her down. In fact I watched her run headlong right into the unknown. Not once, but over and over. Like most of us, Bettina had weight issues and tried different exercise methods until someone invited her to CrossFit. Fast forward a few years and she’s competing.

I asked Bettina about a million questions and could ask a million more, but here are a few.

1. How did you get started in CrossFit?

Three years ago I was the head of a wellness committee, but I was overweight. I thought, how could I expect people to listen to me telling them how to become healthy when I was not. A fellow committee member said he was doing CrossFit in the gym over the lunch hour and invited me to join him. I accepted. For the first couple of weeks I wasn’t sure, and thought I could probably get fit on my own walking on the treadmill, or riding the stationary bike. I had tried these methods in the past, but never stuck to them. Perhaps for a few weeks, but not for long. I decided to continue doing CrossFit because I didn’t want to quit, or be known as a quitter when the

going got rough. I also figured because I was blind perhaps I would not have to do certain things like box jumps, running, etc. Boy was I mistaken, and I am so glad no exceptions were made. I was expected to do everything everyone else was expected to do. After about a month, I was hooked. I started to see me being able to do things I never thought possible, and I was excited to see what was to come. I figured the sky was the limit if I worked hard.

2. How do you feel about the CrossFit community? The CrossFit community has been exceptional. Everyone seeks to treat me the same way they would anyone else. I have never been more accepted by a group of people in my life. It is simply amazing.

3. How do you go about learning a new movement or lift? When I learn a new movement, or lift, I have to feel my coach perform it. Jim Bob Steen, my coach, will get into position, and I check out everything I need to know regarding form. We will go through the movement in slow motion, so I can feel every stage of it, and then I try the movement. Because of my inability to see my coach perform the movement it takes me a bit longer to understand how it should go, but we keep trying and eventually I get it. Jim Bob is very patient.

Bettina and Jim Bob have formed a very close and trusting relationship. They first met at CrossFit Iron Horse last year where JB was a coach. When Jim Bob left to open his own sister Box, CrossFit Chisholm Trail, Bettina followed him. To watch them work is very interesting. JB will perform a segment of a movement and Bettina will feel around as

she translates his movement to her body. Their playful relationship has a rhythm to it where Bettina feels comfortable to move around the Box and Jim Bob knows when to call out direction and when it's not necessary.

During a lifting session, Bettina told me how JB likes to play with the weight amounts he adds to her bar. They tease back and forth but he knows what she is capable of and works to pull it out of her like any good coach would do to any other athlete. I asked JB if he had any special training to prepare himself for coaching disabled/adaptive athletes. He said no, that his training has been on the job with Bettina. She has trained him as he trains her and the result has been phenomenal for both of them.



Preparing for box jumps

4. Ok, box jumps? How did you learn to do those and what was it like the first time? Box jumps were a challenge. I know from speaking to people who can see the box, they are scared as well. I started off by using gym mats. I began by stepping on one that was about two inches off the ground, and

then jumping on it, and after getting used to that one, I then increased the height. After my confidence was built on the mats it was time to introduce the box. Just like everyone else I have the scars to prove I have missed my box. I can guarantee that won't happen twice. My highest jump so far has been 32 and a half inches.

5. Currently, what is your biggest fitness challenge? Right now running is my biggest challenge. I feel uncomfortable doing it, because I haven't really ever run. I continue to run with Jim Bob, but don't trust anyone else to run with me in the CrossFit community. I should though, and should get over my fear.

6. How do we get more adaptive/disabled people involved in fitness? I have been trying to get blind people to get involved in a fitness program of some sort, and it has proven to be very difficult. I believe this stems back to everyone telling blind people, "You can't". After a while you begin to believe that, and not want to try anything that brings you out of your comfort zone. I think right now it is trying to reach the younger people and get them started early.

7. What advice would you give Box/Gym owners regarding attracting adaptive athletes to their facilities? I would tell them when they advertise to emphasize that CrossFit is for everyone regardless of a disability. I would also offer to come out and teach the owners to teach someone with a visual impairment. I can tell you this: you have to be ready to work up close and personal with the blind clients. If you have someone who you are unsure of how to teach

them, reach out to someone like myself with any questions. My mission is not to be the only blind person in CrossFit, but to attract many.

8. What fitness goals do you currently have? I want to continue to compete, become stronger, jump higher, run faster, and be leaner. I would love to compete in the CrossFit games one day. That goal is certainly a big one, but I figure why not shoot for the stars.

9. What motivational or fitness advice do you have to share? Don't let anything stand in your way. We are always too eager to come up with an excuse why we can't exercise, and I believe if you already say, "I can't", you're right, you can't. Keep an open mind and be willing to try new things. Anything worth doing is worth working hard for. Remember nutrition and exercise go hand in hand. You can't have one without the other. If you eat right you will perform better in the gym. I also believe it is good for your mental health.

10. Is there anything else you would like to add or express? I have been so lucky to have had the coaches I did. When I began, Randy Landgrebe took the time to help me understand the concept. He also went with me to California as my sighted guide so I could participate in the Level 1 Training course. I passed! After coming to Fort Worth, Jim Bob Steen continued to help me train. I am very grateful to both coaches helping me along in my CrossFit journey. Without these special people, I don't know if I would have ever made it this far. I plan on continuing to train and hopefully receive more

certifications. I would love to get my next certification in Olympic Lifting. I also plan on doing more competitions. I hope to never quit. One day I will have my own gym.

Have no doubt that whatever Bettina puts her mind to will come to pass. She has the drive and devotion to work for her goals.

You know when I saw Bettina box jump, the phrase “Blind Faith” came to mind. But I wasn’t thinking in the typical negative sense that phrase has come to mean. I wasn’t thinking about just leaping without discernment. Rather I was thinking about how Bettina has learned that her body can

perform amazing feats of strength through practice and patience. I was thinking how she has developed a trusting relationship with coaches like Randy Landgrebe and Jim Bob Steen. I saw how she investigated her surroundings and equipment by touching and questioning. And then I witnessed how she put all that evidence and training and intelligence and trust together and leapt without hesitation and landed, beautifully, securely and confidently. If faith can move mountains, then I have a feeling that the landscape will be altered wherever Bettina goes.

What My Parents Did Right: Recommendations for Parents of Children with Blindness

Patricia Walsh

The author discusses how her parents helped her become a competent and independent blind adult.

Keywords: blind, independence, self-determination, athlete, engineer

Given my topic, “What My Parents Did Right”, you may expect this to be a short read. My opportunities in higher education as well as my opportunities in paratriathlon as a blind competitor have given me new insight into the value of being held to a high standard. As I peer through from the other side, an adult perspective

on a child’s upbringing, I now see method in the madness.

Nothing is black and white. We all do the best we can to traverse complex spectrums of behavior, emotion, and capability. I always tell people the absolute hardest thing about being blind is the prejudice of reduced expectations. Professional peers, family, and the general population always expect the least of me. While at Oregon State University I was completing my degree in Electrical Engineering and Computer Science

while employed in the Physics department. In the Physics department I led a team of research assistants. I had equal to or greater responsibility than my sighted peers based on my ability to utilize adaptive technology to drive to results. One day I was taking the elevator to the main level. A well-intentioned Samaritan approached me and asked some of those awkward questions persons with disabilities hate to be asked. She first asked, "What happened?" She then asked, "Do you live with your parents?" The finale of her well-intentioned barrage of uncomfortable questions came in what was intended to be a loving affirming encouragement; she said, "I think it is so adorable that they let you work here".

Put yourself in my shoes at that one moment. I had worked hard to live to my full potential. I have a stacked resume compared to my sighted able bodied peers. I am holding my own, on my own, at a major university. In that moment in time all of my hard work had been reduced to the assumption that my presence was as a token. How hard it was, and has been for me to not become a defensive person! How hard it is to maintain a commitment to being a gentle educator. My experience has been that no matter what you accomplish you cannot outrun the cultural perspective of being lesser than. It is only through cultivation of a sense of capability that you can combat the pressure of reduced expectations.

My only opportunity to interact with others with blindness or disability is as an athlete. As a member of the U.S. national team I run into individuals with blindness that ranges the spectrum. What I find interesting is that there is no apparent connection between degree of vision loss and independence. I know legally blind people who are very dependent, I know

totally blind people who are very independent. I know grown adults with blindness who can hardly answer a question on their own as their helicopter parents swoop in to answer for them, giving the rest of the world the impression that their grown son or daughter may instead have a cognitive disability.

Truthfully, more than any of the other disabilities I believe the degree of blindness does not impact the capability. What does seem to impact capability is the sense of identity, the sense of competence, and the opportunities to cultivate skills as a self-advocate.

My parents were, and may still be in extreme denial regarding my disability. There was a pendulum swinging from ignoring the problem, to sometimes exaggerating the problem, to sometimes using the problem for attention; they were all over the map. I remember being screamed at to express my grief. I remember being screamed at to do better in school. I remember being so whole-heartedly confused as to how I should adapt to my vision loss. As a child I resented their lack of help and guidance. I felt hung out to dry. As an adult now that I have been exposed to persons with blindness and low vision that are far more dependent than their disability requires, I have a tremendous gratitude for my resourcefulness. I am a high achiever by any standard. I have a strong sense of self. I see myself as a leader. I would never have had that if I had not had opportunities to develop a toolset to advocate for myself.

I'm writing today not to encourage you to scream at and confuse your children; rather to find a middle ground on the spectrum of helping to a fault versus offering no help at all. Your children with blindness need support. They need you to

affirm that they are capable by not treating them like they are infants. Your children should be challenged and trusted to rise to that challenge independently. The best most wonderful tool you can bestow on your children is the gift of good judgment, which can only be learned through opportunity to practice.

I suspect this practice may be hard on both the child and the parent. Your child should be involved in activities. When I speak to students with blindness or disability the advice I always give them is to find something you are good at that you enjoy doing. Do not let the one thing you most glaringly lack become your identity. It is amazing how investment in a sense of capability can overflow to all aspects of life. It is through success in incremental challenges that your child can become a powerhouse of capability, whether your child is blind, has low vision, or is able bodied. Your child's greatest asset will be in trusting his or her own judgment.

I am fully independent today. I travel the world without guidance or assistance. I truly live a life beyond my wildest dreams. Without sight I still trust my own perception of my surroundings over what others might describe to me. The most dangerous and damning thing you can do to a child with a disability is to over-protect. I know how hard it must be to let go. Give your child the gift of trusting their own judgment by allowing them space to grow; they will need the practice. Trust me; they will thank you for it later.

“Adversity has the effect of eliciting talents which in prosperous circumstances would have lain dormant” – Horace. As a parent it must be so

hard to watch your child suffer in any capacity. I have sincere compassion for that. Still, I appeal to all parents to hold your children to a higher standard. Teach them appropriate independence as you would an able-bodied child. If a parent always steps in to make decisions on behalf of their child with disabilities that child may never have opportunity to discover their own talents. Your intent may be to protect, but the result is to stifle. As a child I was resentful of being required to fend for myself. As an adult I'm full to the brim with appreciation for my own sense of capability, sense of self, and ability to traverse complicated situations independently.

My final appeal is to ask all parents to meet in the middle. Push your children to be capable. Teach independence. Help your child to cultivate capabilities, gifts, and talents that may have otherwise lain dormant. The only person who truly knows your child's limitations is your child. Imposing perceived limitations on your child serves no one. Bring all that love and dedication you feel as parents to help your child grow.

Patricia Walsh is a four time national champion paratriathlete, two time ITU Bronze Medalist, two time PATCO champion, USAT Athlete of the Year 2012, award winning engineer, and author of *Blind Ambition: How to Envision Your Limitless Potential and Achieve the Success You Want*. She was featured on NPR, Success Magazine, CEO Magazine, and Thought Leaders LLC among others. Please feel free to contact me at: Patricia@BlindAmbitionSpeaking.com

Questions?

Where Do Parents Go for Answers?

Cyral Miller, Director, Texas School for the Blind and Visually Impaired Outreach Program

The author discusses local, regional and statewide resources which can provide information and support to families with blind school aged and transition aged students with visual impairment

Keywords: visually impaired, education, Texas

Do you know where to turn when you have questions about your child's development or academic progress? There are hundreds of online sites to explore visual impairment or deafblindness in general and some about more common eye conditions. An earlier article in TXSenseAbilities described some of the components that parents can look for to see whether their child's program meets quality standards related specifically to their unique sensory functioning. (See the resources section.)

Still, it can be difficult to apply all that information to your own child's situation. Perhaps you have a very young child or a child who just recently was identified as having a visual impairment - all the new jargon can be daunting. Even if you have been parenting a child with sensory impairment for many years, new milestones and new challenges often prompt new questions. Where do you go for the more personalized answers you need? Luckily, in the state of Texas there is a strong network for supporting families who have questions about their child's development and educational program. Here is how to access the help you need:

1. Start local!

Find out who your child's teacher of students with visual impairments (TVI) is. By Texas state law, every student with a visual impairment that qualifies them for special education must have a TVI as part of their IEP team (Texas Administrative Code). This is the person most likely to understand the impact of your child's visual and/or other sensory impairments on overall learning. Your local TVI (and/or COMS, if your child receives orientation and mobility services) will likely be your primary school-based resource.

Spread across the state, as well, are representatives from the Department of Assistive and Rehabilitative Services' [Division of Blind Services](http://www.dars.state.tx.us/dbs) (<http://www.dars.state.tx.us/dbs>). The Blind Children's Vocational Discovery and Development Program and the Transition Program, which is part of Vocational Rehabilitation, provide support for children in schools, and life planning guidance for adolescents and young adults. Their representatives will help families prepare for IEP meetings and will attend with you. They can help you access training and meet other families in your area. To find the nearest office, check on

their website or call DARS/DBS at 1-800-628-5115.

2. Look for regional resources

The state of Texas is well known for its size; we're gigantic! To ensure that information flows to all, there is a network of 20 Education Service Centers (ESCs), linked directly with the Texas Education Agency. At each region, there is a VI Specialist and in some regions a Certified Orientation and Mobility Specialist as well. You can find the name and contact information for each ESC at the [TEA website \(http://tea.texas.gov\)](http://tea.texas.gov). These experienced VI professionals are there to support local districts and typically are available to visit with parents and local teams. Many regions sponsor regular extra-curricular activities to develop the specialized expanded core skills your child may need.

If your child is deaf or hard of hearing as well as having a visual impairment, you may want to connect with an ESC DB Specialist. Each ESC has designated a Deafblind Specialist, and a list of these individuals is posted on the ESC III site. ESC III coordinates statewide services for students with low incidence disabilities. Go to [ESC DB Specialists list \(http://swwww.esc3.net/Page/198\)](http://swwww.esc3.net/Page/198).

Texas is so fortunate to have these resource people at ESCs across the state. If your questions aren't or can't be addressed at the local level, contact your ESC VI or DB specialist for support.

3. Statewide supports

Many parents faced with a diagnosis of visual impairment and/or blindness or deafblindness will search the web and quickly find the Texas

School for the Blind and Visually Impaired (TSBVI). The newly revamped [TSBVI website \(http://www.tsbvi.edu\)](http://www.tsbvi.edu) is a treasure trove of information that is available to all Internet searchers. That is one way in which TSBVI serves the state. What family members are not always aware of is the broad mission that TSBVI has to support ALL students with visual impairments in Texas, including those who are served in their local communities. TSBVI offers three major programs:

There are two on-campus programs for students. These are based at the TSBVI campus in Austin: Comprehensive Programs for year-long campus programming, and Short Term Programs, for 3-5 day programs that address specific goals during the academic year and an extensive array of summer programs. Sometimes, the very best way to address your child's needs may be to attend one or more programs on campus.

Most students spend the majority of their school days in their home communities. TSBVI has one of the largest Outreach Programs in the country, and it serves as a statewide resource for families and professionals on blindness and/or deafblindness. The Outreach Programs offer many kinds of assistance and training. This includes school consultations: TSBVI staff is available to travel to your community to collaborate on student programming. This is a team model, with time for observation, team brainstorming and collective problem solving. The local district must request a consultation visit for students served in local district programs, and we work in conjunction with the ESCs to ensure local and regional follow up on any suggestions. Requests can be made for home visits, visits for infants served through the Early Childhood Intervention program, and for students

who may be served in related agencies or community settings. All requests for Outreach assistance can be made from the Outreach homepage on the [TSBVI website](http://www.tsbvi.edu/outreach) (<http://www.tsbvi.edu/outreach>).

Another important statewide support network are statewide family organizations. There are times when only a parent who has traveled the same path can truly understand your situation. Texas has several dynamic family organizations specifically centered on visual impairment and/or deafblindness. You can find information on these groups on the [TSBVI website's parent portal](http://www.tsbvi.edu/parent-portal) (<http://www.tsbvi.edu/parent-portal>).

If you have questions, there are many ways to find answers! Start local, but don't stop there. Look regionally and then statewide. We are a large but close-knit community in this state and

look forward to supporting your child to reach his or her potential!

References

Is My Child Getting A Quality VI Program? Available on [TSBVI website](http://www.tsbvi.edu/resource-pages/4248-is-my-child-getting-a-quality-vi-program) (<http://www.tsbvi.edu/resource-pages/4248-is-my-child-getting-a-quality-vi-program>)

Family organizations are listed on [TSBVI website](http://www.tsbvi.edu/family-support-organizations) (<http://www.tsbvi.edu/family-support-organizations>).

[19 Texas Administrative Code 89.1050\(c\)\(3\)](#)

Texas Education Service Centers: a map can be found on the [TEA website](http://tea.texas.gov/regional_services/esc) (http://tea.texas.gov/regional_services/esc). Or you can contact TEA by phone at: 1-800-252-9668

Texas School for the Blind and Visually Impaired, Programs. Available on the [TSBVI website](http://www.tsbvi.edu/comprehensive-programs) (<http://www.tsbvi.edu/comprehensive-programs>)

EFFECTIVE PRACTICES

New to Deafblindness? Five Tips for Administrators

Marina McCormick, M.Ed., Region 4 Regional Day School Program for the Deaf Coordinator

The author discusses ways local school districts can serve students with deafblindness. She emphasizes collaboration, putting the student first, rewarding outstanding staff, and including the student as part of the local community.

Keywords: deafblindness, administrators, collaboration, inclusion.

When most people encounter the word deafblindness, the first image that comes to mind is one of Helen Keller and her teacher, Anne

Sullivan. Thanks in large part to Keller's articulate and thoughtful nature, the groundbreaking duo challenged public perceptions regarding what was possible for people with multiple disabilities.

Although Keller's life is an inspiration to many, the reality of deafblindness is more variable than originally understood by those outside the education arena. This variability within deafblindness comes from many factors. For example, children experience variations in their hearing and vision losses. One child with deafblindness may exhibit excellent use of his residual hearing and struggle with nearsighted vision while another may have better visual acuity but have profound hearing loss. Other factors that lend themselves to the diversity within deafblindness include the child's cognition, sociological factors, communication modalities, social-emotional development, and technology skills. Children with deafblindness, through the very nature of their disability, require individualization to meet their needs.

It is the full realization of individualization, though, that many public school instructional teams struggle with when serving a student with deafblindness. An instructional team may encounter an individual with deafblindness for the first time and may grapple with how to provide that individual with access to the curriculum. From these tremendous efforts emerges a false belief that the student with deafblindness cannot be successful in the public school setting and should be sent elsewhere for his or her instructional needs. This notion can be countered, however, with a strong education administrator leading the team.

The following are five tips for administrators as they lead their teams to greatness for students with deafblindness.

1. Develop a deep understanding of the student's needs.

In order to effectively lead the team that will provide services for the student with deafblindness, the administrator first must become highly knowledgeable regarding the student and the student's academic and functional needs. Deafblindness is a disability that relates to access. How will the student access the curriculum, the environment, or the social network of the campus? Familiarize yourself with the student's audiological and vision reports. Learn about how the student communicates and what accommodations and modifications the student requires. Become knowledgeable about the student's daily living needs. The student's multidisciplinary team (which could include teachers for the visually impaired and/or deaf, an orientation and mobility specialist, general education teachers, and others) or other campus personnel will, in most cases, contact the administrator first when questions arise related to the student's services. Without possessing a thorough knowledge of the student's disability and programming, an education administrator cannot sufficiently answer the question that underlies all other questions: Why are we doing this?

2. Know the team. Be the team. Lead the team.

Ronald Reagan once said: "The greatest leader is not necessarily the one who does the greatest things. He is the one that gets the people to do the greatest things" (Goodreads, 2015). Individualizing services for a student with deafblindness undoubtedly is one of the greatest things an education administrator will ever ask his or her team to do. Therefore, it is critical to identify the team that will serve the student. List every service and support the student requires

and align the student's needs with your current staff, categorizing staff members as core team members (frequent interaction with the student) or extended core team members (infrequent interaction with the student). Form a strong relationship with the student's parents or guardians; they, too, are a part of the student's core team. Identify the strengths of your team and those areas in which your team will need additional training. Establish regular meeting times for both the core team and the extended team. Be actively engaged in meeting and learning with the team.

3. Be student centered.

In the era of high-stakes testing, educators too often want quick solutions to their instructional problems. Effectively serving students with deafblindness is a marathon, not a sprint. The instruction for a student with deafblindness requires coordinated attention between the student and the teacher, both coexisting in the here and now. What this translates into for teachers is that lessons are not traditional and do not lend themselves to typical concepts of school time such as 45 minute class periods. For teachers who are unfamiliar with deafblindness, this can be a cause for concern because they may be unfamiliar with techniques related to differentiated instruction.

When considering programming, all team members will be involved with many e-mails, phone calls, and meetings. IEP meetings may be extremely long due to the number of services and service providers a student may need. The preparation and instruction for the student will be intensive for staff. Ongoing professional development will be needed. With all of this happening, it is essential to champion the purpose behind why the team is working so hard.

4. Reward outstanding staff contributions.

As your staff rises to your high expectations for high quality instructional services and support for the student with deafblindness, recognize and reward their achievements. These achievements do not need to be momentous occasions. Small wins such as collaborative efforts, instructional strategies, or consistency in providing excellent service and support are just as important. Have you noticed that your intervener and interpreter are working together to provide linguistic and conceptual support for a complex biology lesson? Did you observe the adaptive physical education teacher providing a superb accommodation for the student to walk around the track? Reward success often to encourage your team.

5. Remember the community's trust in your school and in your district.

Often it is tempting for a team to want to focus on what it cannot provide, rather than what it can provide, for the student with deafblindness. Keep in mind this essential truth: The student and the student's family are valued members of your community, and they have placed a great time-honored trust in you and your school's abilities not only to meet, but to exceed, their expectations. According to Jay Gense, former director of the National Center on Deaf-Blindness, 95% of students with deafblindness nationwide are living at home with their families and attending school in their communities (Gense, 2015). Your team, in most cases, can fulfill the needs of a student with deafblindness through creative problem-solving and open lines of communication. It is up to you as the administrator to foster the belief of "Yes, we can!" rather than "No, we can't."

Concluding Thoughts

It is not often that a student with deafblindness crosses a school's path, but when he or she does, the possibilities for learning for the student and the student's team are endless. Students with deafblindness have an uncanny ability to stretch our professional understanding of what is educationally possible within the public school setting. They desire to achieve their goals and dreams as much as any other students, and even though we may not necessarily have a direct line in some cases as to what those aspirations are, these hopes exist nonetheless.

As Helen Keller said in *The Story of My Life*, "One can never consent to creep when one feels an impulse to soar" (Keller, 2002).

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Learning About My Eye

Submitted by Cindy Bachofer, PhD, CLVT
(with thanks to Maribeth Betton & Cristi Fleming for the invitation to their classroom)

The author discusses ways to teach students with visual impairment about anatomy and functions of the eye, visual impairment, and eye examinations. She lends her personal perspective as a teacher and consultant with visual impairment herself.

Keywords: eye anatomy, self-determination, science and technology

"What's wrong with your eyes?" or "Why can't you see that?" are questions that students with visual impairment, both those who are blind or have low vision, are likely to hear throughout their lives. These questions, ranging from curious to insensitive to supportive, may come from peers, from neighbors, or from someone in

a store. Students may feel especially sensitive or self-conscious about their eyes as this is one trait that makes them different from peers and family. Having the ability to respond to such questions in a confident way whether to engage, delay, or end the conversation is an important part of self-determination. It is an empowering feeling to be able to direct the interaction and, if they choose, to describe this unique feature of themselves with poise and accuracy.

Explicit instruction at both the elementary and secondary level is needed for students to increase their understanding of the visual process and to explain these concepts in their own words. This article describes benefits of learning about the eye, including the visual system, and individual eye conditions and application of this topic in both the general curriculum and the Expanded Core Curriculum (ECC). The article also summarizes a set of lessons and activities developed over a number of years to learn about eye anatomy and functioning. This initial topic gives a natural lead-in for students to recognize the implications of their visual impairment and to describe tools and strategies they use to manage tasks independently. These activities came together in a semester-long unit for use with a class of 5 students in the Experiences in Transition (EXIT) program for young adults at Texas School for the Blind and Visually Impaired (TSBVI). An emphasis of this program is career readiness, including students' development of skills to put potential employers and co-workers at ease concerning their visual impairment and their ability to meet the demands of the job.

Information about their eye condition may come from different sources such as their parent, eye doctor, or the teacher of students with visual impairments (TVI). Instruction in this topic is a recognized part of the TVI role and chapters on the visual system and eye conditions are a standard inclusion in textbooks within the field of visual impairments. Few studies (Guerette, Lewis, & Mattingly, 2011; Sacks & Corn, 1996) are available to document students' knowledge of their eye condition and the area warrants further investigation. When asked, 85 of 89 students (Sacks & Corn, 1996) or 96% responded in a survey that they had questions

about their visual impairment while only 42 of the participants (48%) reported that they brought this up with their parents. Students vary in how much they want to know about their eye condition and for some the most basic facts (e.g., name, part of the eye affected) are sufficient. Two studies across a 15-year span report similar and very limited understanding by students of their visual impairment. In the earlier study (Corn & Sacks, 1996), 34% (N=30) of participants could name their eye condition and only 13% (N=11) could name the part of the visual system that was affected. Researchers in the more recent study (Guerette, Lewis, & Mattingly, 2011), reported that 31 of 51 participants (62%) said that a parent, teacher, or doctor had told them the name of their eye condition. Of this group, only 16.3% could actually state the name and explain what it meant and 35.5% could only give the name. The majority of students in these studies seemed to remember that they'd heard about the impairment but had not retained enough information to respond accurately to more specific questions. What responses would our students give to an interviewer today?

Learning about the eye can have additional benefits for students beyond gaining factual knowledge about how the eye works. This includes self-awareness, application to academic work, and practice in areas of the ECC (e.g., assistive technology, self-determination). The development of positive self-identity for a young person who is visually impaired begins with having accurate information about his or her eye condition and being able to communicate this information to others in school, community, and work settings (Guerette, Lewis, & Mattingly, 2011; Sacks, 2010; Sacks & Corn, 1996). A critical part of healthy self-identity and positive self-esteem is recognition that the visual

impairment is only one aspect of the person who is made up of many different interests and goals.

Talking about the eye can spark curiosity and open up communication for students who may have barriers about identifying as someone with a visual impairment or are struggling with a sense of low self-worth. I have often been surprised how students with a guarded demeanor have let their guard down when they pick up a 3-D model of the eye. They especially take ownership in these lessons when they get to guide the direction of exploration and when they discover that the resources for learning about the human eye go beyond a book. This information may be emotionally charged for some students and it is advisable to talk with parents before beginning instruction.

This topic can be applied in a student's academic setting in a number of ways. The study of optics and the properties of light fit into the science curriculum as a branch of physics and have relevance throughout our day with use of items such as eye glasses and camera lenses. Learning the names of the parts of the eye (e.g., cornea, vitreous) and eye conditions (e.g., hypoplasia, oculocutaneous albinism) fulfills language arts objectives of word construction and vocabulary building. Taking apart and rebuilding these multi-syllabic words can have high appeal for students with poor literacy skills and provide a bridge to related language arts objectives. Learning about the eye and the uniqueness of eye conditions also presents ideal topics for personal essays and research papers at any age level. Students may also be interested in independent study projects in classes such as journalism, public speaking, or art. Numerous benefits exist for studying this

topic at both the elementary and secondary level.

Learning about the eye presents opportunities for practicing ECC skills. Instruction directly supports practice in assistive technology, self-determination, and sensory efficiency skills. Related areas include career education and social skills. The remainder of this article describes activities used with students to increase their understanding of anatomy and physiology of the eye and their eye condition. These lessons can be as brief as 10 minutes or last an hour and can be a motivating reward for completing other work. Most can be adapted to various grades and functioning levels and can be used for a single student or a class. A necessary component of each lesson is providing time for students to discuss what was learned as well as allowing the student to role play or practice communicating about their vision with an array of individuals (peers, teachers, doctors). This gives them the opportunity to test their own explanations and be prepared to respond when someone asks, "What's wrong with your eyes?"

Life-sized Eye (group activity)

Students participate in staging a super-sized eyeball from everyday items. Each student receives an object that represents a part of the visual system and a card with the part in bold letters or in braille as needed. The members of the cast have rehearsed a brief definition of their term such as "I'm the cornea and, like a windshield, I protect the eye and stop things from getting in it." "I'm the retina or the back wall of the eye where all of the nerves take the image and send it to the brain." Short definitions such as these capture the basic purpose and position in the eye. Depending on the group size, the cast

can be as small as 5 or up to 20 with two life-sized eyes.

The Life-sized Eyeball lesson travels easily. My eyeball-in-a-bag kit typically includes seven eye parts: a large clear plastic serving bowl for the cornea, a brightly colored flexible 7" cloth ring pool toy for the iris, a clear plastic bowl-shaped planter insert for the lens, a thick balloon filled with a gel substance or a squishy, smooth ball for the vitreous, a shag carpet square or bath mat with thick pile representing cells and blood vessels as the retina, exercise bands for two cast members are the muscles of the eye, and finally, the brain is a textured rubber ball with bumps or nubs. To expand the list, additional parts such as a foam tube, from a craft or hardware store, can be used as the optic nerve and a round plastic leak-proof pouch for holding toiletries can serve as the aqueous. Additional factoids can be shared such as the aqueous is 99% water, the word base of retina in Latin means net, and eye muscles are the fastest reacting muscles in the whole body. The interactive nature of this activity appeals across school grades from kindergarten to senior year. Even hard to impress young adults have asked for a repeat session with the Life-sized Eyeball.

3-D Eye Model

Taking apart and re-assembling the 3-D eye model gives students time for a close-up inspection of the eye. A number of affordable models for purchase are available through the internet. The eye doctor or the science (human anatomy) teacher is another good resource. It is important that the model be an accurate representation of the eye and has removable parts so the student can understand their shapes and location within the eye structure. This lesson

also gives a chance to practice definitions and review how the parts work together.

Eye Diagram in Color

A colorful, clearly labeled diagram of the eye is a great take-home page for students to keep. A copy on cardstock holds up better for long-term use. Study of this cross-section view of the eye gives practice time for naming the parts and knowing the position of each. Once this page is familiar, students can receive an un-labeled outline of the same diagram, or a tactile outline, to color and label. This activity lets them begin the process of finding their own words for describing their eye condition and its effect on functioning. A student may explain her light sensitivity when working on the computer and accessibility options that increase comfort. Several practice sessions are needed to help the student gain confidence to do this independently in conversation with others.

Eye Words Match-up

Correct spelling and pronunciation of parts of the eye is essential for students to feel confident in their communication. These words, such as sclera, conjunctiva, and vitreous, have an intriguing or exotic sound and this feature helps to capture student attention. Talking about the eye model has already provided exposure to this distinct vocabulary. Taking the words apart, either in print or braille, and re-matching them into pairs (e.g., cor-nea, ret-ina) is more engaging than spelling drills. Students can follow a word list at first in the matching exercise and then challenge themselves to timed contests in the matching.

Animal Eyes Research

Having a comparison to our human eyes is helpful in making distinctions of how our vision

works versus other creatures in the animal world. Through resources such as children's books and short YouTube videos, this lesson reinforces the function of eye parts such as the pupil and photoreceptors. Younger children have a particular fascination for learning about animals and these brief activities lead to more in-depth understanding. Stephane Frattini's wordless book *Who's Looking at You* is filled with close-up pictures of animal eyes. YouTube videos also have stunning photography and present related information such as side-by-side comparisons of vision. For example, snakes can see heat signatures at night, birds and fish have ultraviolet photoreceptors, and a rat can move each eye independently. More than just great trivia, these activities can help a student become more receptive to discussing differences in eyesight and appreciating visual abilities.

Magnifier and Mirror Close Up

Examining the eye close up can be a fascinating experience. It is advisable to preface the activity with a little discussion to confirm each student's comfort level. Students can examine and admire their own eye with a 10x mirror, available in a variety of discount store cosmetic aisles. Shakespeare's line "The eyes are the window to the soul" may suggest why this close-up activity is a very personal one for some students. One student commented with an anti-climactic tone after observing his nystagmus, "So that's what they keep talking about?" Other eye conditions affecting the front view of the eye such as coloboma or aniridia can also be viewed. With permission, students may find a partner and agree to look at the eye of a peer or a family member through a stronger handheld magnifier of 6x or 8x power. Our eyes are as individual as our fingerprints and this activity proves that fact.

Clinical Low Vision Exam

Preparing for a low vision examination presents new topics for learning about the eye. Another visit to the eye doctor can raise anxiety and it is helpful for students to understand how this doctor visit is different. What is contrast sensitivity, field of view, or stereopsis? How are these characteristics measured and how does each impact functioning? A primary goal of the clinical low vision exam is to measure factors of visual functioning (e.g., acuity, adaptation to light) and to increase visual functioning (e.g., scanning to maximize field of view). Students and teachers can prepare for this exam by learning about the different tools used and recording questions for the doctor. The student becomes an active participant by bringing these questions to the appointment and becomes more invested in the information shared. Pictures of a contrast sensitivity test or a near vision test help students become familiar with these items ahead of time. For example, arranging the discs in the D-15 color test may confuse some students and they can practice by arranging a large pack of color markers in a similar manner. Having a chance to explore a range of optical devices before or after the appointment if a display area is available is another valuable aspect of the exam. To develop their awareness as an informed consumer of devices, it is essential for students to recognize that these tools vary in design and features such as power or field of view. As a concluding task, the student and teacher can take time to read the low vision report sent by the doctor following the exam. An alternative when an appointment is not scheduled is to arrange for a brief 15-minute phone interview or Skype call with a low vision specialist to cover a student's specific questions

Edible Eyeballs

Food is motivating for every age level. This activity provides one more representation of the eye and focuses on the exterior layer. A variety of recipes are online. Campfire-sized marshmallows give students a large surface area for creating their eye (or pair of eyes). This also invites discussion of the sclera, the visible white part of the eye. Students can choose their favorite iris color from Gummy lifesavers with the lifesaver hole being the pupil. After discussion of the pupil, students may prefer to add a big chocolate chip or an M&M to mark the empty spot. A flexible candy retina such as Rips® licorice squares sit on the back of the marshmallow. Students can use a plastic knife tip to make the opening in the marshmallow eye and the candy retina for the licorice vine candy optic nerve. Icing as glue is helpful for holding the parts together and adding to the popular dessert factor. This provides one more activity for students to practice talking about the eye and gain a conversational ease with eye anatomy. (Thanks to TVI Kathi Garza and her students in the TSBVI elementary summer enrichment program).

Technology Tools

The computer or iPad are ideal research tools for bringing together assistive tech skills and further study on the eye. Our reliance on vision as a primary sense leads to universal curiosity on how the eye works and disorders of the eye. A student may choose to explore topics such as instruments used in an eye exam (ophthalmoscope, auto-refractor), consumer organizations established for individual eye conditions (NOAH for albinism), or medical advances in vision (such as electronic retinal implants). Beginning tech users can read a simple teacher-prepared document that

describes the process of seeing or search for student-oriented sites for learning about the eye (e.g., [Kids' Health](http://kidshealth.org/kid/htbw/eyes.html) at <http://kidshealth.org/kid/htbw/eyes.html>). Being able to share specialized knowledge on an engaging topic can provide an important boost to student self-esteem.

Student Presentation

The telescoping chrome presentation pointer was appealing enough to lessen stage fright as each speaker considered the eye poster at the front of the room. Students in the Texas School for the Blind and Visually Impaired EXIT class took turns acting as presenter and describing the structure of the eye, their eye condition, and its implications on functioning. Activities through the semester prepared them for this assignment and, after a rehearsal, their delivery was impressive. Then, they wanted to do it again! Students could choose to record their presentation to show to teachers or they could expand this assignment to creating additional products such as a Powerpoint presentation or a pamphlet that becomes part of the portfolio that introduces them. This request affirmed that the unit had met its objectives of increasing self-awareness and confidence as a person with low vision and taking ownership in this feature that made each of them unique.

As an elementary student I can remember reciting the syllables of my eye condition, re-tro-lent-al fi-bro-pla-sia (now known as retinopathy of prematurity) the longest word I knew as a 9 year old. I was especially drawn to pictures of the eye in the encyclopedia. Talking about this out loud did not occur until I was an adult. Use of instructional time for students to retain the necessary knowledge of their eye condition and to gain confidence in expressing the information

is warranted. This topic has multiple benefits for students in the general curriculum, areas of the expanded core curriculum, and psychosocial development. Lessons created for this topic can have great flexibility in terms of time commitment and student individual needs. From creating life-sized eyeballs to learning from YouTube videos, it's time for eye time.

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General Orientation and Mobility Recommendations for Functional Programs

Chris Tabb, Orientation and Mobility Consultant

The author presents an overview of orientation and mobility instructions for students with significant disabilities in addition to visual impairment.

Keywords: orientation and mobility, functional skills, movement, concept development

Note: This document was intended for all members of a student's IEP Team. The pronouns are intentionally varied; "student" will be used at times and "child" will be used at others. Though it may appear that one section is intended for a parent and another for an education professional, all strategies can be implemented both in the home and the educational setting.

Encourage Purposeful Movement

Having times in the day which allow students to practice moving independently will help them to develop skills that can be generalized to new areas and longer duration travel. Purposeful

movement can be as simple as bringing a hand to a preferred toy that is next to or even on the body. When there are structures in place to support and encourage this movement at home and at school, the motivation to travel and begin moving with purpose will increase. Examples of establishing a supportive environment for purposeful movement include having a location for preferred toys that the students can access at any time and reliably find favored objects there. This strategy can be enhanced or extended by using tactile markers that show certain areas are "their" areas, such as marking a cubby and coat hook with a texture or small object that will help

them to know where their own things are at school. The marker can also include a braille label so they begin to develop the concept that braille is associated with names of things. Other places where it would be helpful to include “their” symbol or tactile marker are their chair, desk, door to their room at home, etc. With an expectation of predictability and control in the environment, students are more likely to initiate travel on their own and also begin developing a sense of self-mastery and confidence for travel as they receive their own, earned reward when they reach their favored objects or destination of choice. This natural reinforcement perpetuates the motivation to move.

Another helpful strategy is to plan some “free exploration” time into the student’s day, just a brief period (e.g. 10 to 20 minutes) where they can practice navigating in the school and or home environment (even outdoors when the terrain and other conditions are safe for doing so). This gives an appropriate and educationally beneficial opportunity to satisfy and encourage curiosities they may have about their environments. If they become disoriented or find something unexpectedly, it becomes an excellent opportunity to develop problem solving skills. An example might be finding a hallway in the school that allows them to take a new route to class, or finding a library cart in the hallway and learning how to navigate around it safely. During this time, an adult is nearby to assist as necessary, but the student is deciding what to do and where to go, rather than the adult providing the agenda and directing their actions.

Developing Sensory Efficiency

Encouraging the student to become aware of all of the sensory input they have the physical ability to attend to in the environment will help them begin developing the skills related to sensory

efficiency. Remember to include tactile, auditory, kinesthetic, proprioceptive, olfactory, and if there is the ability to receive visual information, then vision as well.

One way to think of the difference between kinesthetic and proprioceptive input is how you feel on a hill. When walking up or down a hill, you feel different muscles being used; and, if you are walking up the hill you certainly feel the additional strain and effort needed to ascend the hill. This muscle sensation is kinesthetic. This is a way to tell whether there is an elevation change on a path regardless of vision.

Proprioceptive would be the sensation that you feel in your joints, such as in your ankle as you flex forward or backward to be upright while standing on a hill. The same sensation can be recognized while standing on a foam roll, or while leaning on the edge of a step or curb. These are not typically “taught” to children as most children have already recognized they are on a hill with their vision, it is considered incidental learning. When we take the time to deliberately draw attention to these other sensory inputs available to our children, we help them learn tools that they can use to access information about their environment at any time.

When teaching, we will often say “look at this” or “do you see how...”; these visual representations are often the way that adults learned and they convey the information they are teaching to students in the same manner. By thinking about the other senses available to our students we can help them to “visualize” their environments through these other, or additional sensory channels. It might be clapping hands in the gymnasium to hear the echo and then comparing the same clapping sound in the smaller and often more auditorily reflective bathroom; or,

listening for the sound change while passing interconnecting hallways in a quiet main hallway. As adults likely learned about the world in a wholly different manner, it may take some additional thought and creativity to introduce sensory exercises, but the dividends returned in independence in the children is tremendous. Once they begin recognizing all the sources of information available to them and continue attending to the sensory information, their ability to visualize (visualized through a variety of sensory channels, such as sound waves that make a picture for sonar) their world continues to develop.

Here are some activity examples to practice:

1. Localizing sounds, such as identifying the location of dropped objects or pointing at a person who is walking and following the sound of their steps.
2. Aligning with sounds
3. Walking toward and away from sounds
4. Walking around sounds to circumnavigate something
5. Identifying patterns in sounds
6. Using echoes and reflected sound (passive and active echolocation)
7. Distinguishing sources of sounds, such as car, lawnmower, airplane
8. Estimating distance of sound
9. Estimating direction of sound; is it coming toward or going away from?
10. Understanding when one's own ability to use sound is impacted by changes within the environment, or within one's self
11. Finding other sensory means to verify or confirm what is being received or interpreted through the auditory channel

The tactile sense can include touching different textures or temperatures. It might be a lesson in feeling the sun on the skin for maintaining alignment along a route and determining direction of travel by knowing the location of the sun.

The olfactory sense can aid orientation and connection with the environment to provide clues for what might be happening in the environment, such as smelling the aroma of a bakery, or recognizing a strong smelling dumpster that you have to walk past every day in the parking lot as you approach the school.

Advancing Concepts

Rough and smooth, inside and outside, more and less, fast and slow, these are all concepts that can be developed across educational settings and in the home. The more concepts that are developed and used in varied places and settings, the greater the power and connection of the concepts. Those that are originally introduced at a desk activity might later be used when matching textures of clothing, discerning landmarks, etc.

Often concepts that would be learned through exploration by children who are visual learners must be taught more deliberately to students who are blind and visually impaired as they may not otherwise recognize learning opportunities that are in the environment. This might include feeling the glass windows and discussing the qualities of glass; it holds temperature and is hot in the summer and cold in the winter, it is very often smooth and hard yet it makes a different sound than either wood, metal, or plastic. Each of these materials can be explored, and new concepts related to their qualities introduced, compared, and contrasted.

Consistency in Learning Environments

Regular repetition and having all team members working on the same concepts and skills, with the same language for these, will facilitate the acquisition of the concepts and skills. Keeping the number of new concepts and skills to a minimum level that is represented and reinforced in multiple areas across settings (i.e. in the classroom, with each related service, and at home) keeps the new information at the center of attention and learning and allows for a maximal number of occurrences to connect the concepts with different situations and environments. The more the concepts are experienced the quicker the acquisition, and the more they are encouraged the stronger their resiliency and meaning.

Routines in the student's day provide natural repetition and opportunities to learn new concepts and practice others that have already been introduced. Ensuring that the child has the same routine presentation will help them achieve increasing levels of independence within the activities of the routine; photographs with descriptions of the steps for the routine and its set up can be laminated and placed near the routine area so that whoever is working with the student will set it up the same way. This allows the student to focus on learning the routine itself and any concepts that are being deliberately included rather than having their attention distracted by differences in setup or preferences of the adult they are working with.

An example for the early stages of purposeful movement is an activity mat or rug, where toys are placed in consistent locations (e.g. the musical toy always goes in one corner, the vibrating toy diagonal to the first, a plush toy in the third, and a squeeze toy in the final corner).

With the toys being placed in consistent locations, regardless of the adult the student is working with, they will be more inclined to explore, as they will be able to predict where their favorites will be, and then successfully achieve getting what they want independently. These skills can then be generalized to larger areas, such as travel within the classroom, the school building, and ultimately the school area, including the outdoor recess area.

Value Sharing

Interactive games and value sharing time where the student is met at their own place and level of interest is the best place to begin developing rapport. This rapport development is a foundation for later expansion of skills when students are presented with possible fear at learning new skills (e.g. entering loud environments, crossing streets, etc.) and can rely on the trust they have developed with the adult they are working with.

As adults we often forget to be truly listening to the student, especially when the child is non-verbal. We need to remember to join them in their moment whenever possible rather than starting by trying to coax them into the moment we would like them to be having. We are much more apt to get their "buy in" to the activity we are proposing for them to do if we have first met them where they are and shared what they are involved in. In this way, we are already connected and communicating before offering what we would like them to consider doing.

Motivators and Communication

Keep track of what is motivating and aversive to your child. These items or sensory experiences can then be used as "carrots" or motivators for other activities if they are positive motivators for

your child, or if they are aversive stimuli they can be helpful for demonstrating conceptual understanding with preferences and aversions. This can be during a choice sequence with a calendar system to verify that an item that is expected to be viewed as aversive by the child will not be chosen, and a preferred item will be selected. Once these items are consistently communicated using the actual object, they can then be transitioned to a symbol or piece of the item, such as the chain from the swing to represent the activity of swinging. Eventually the symbol will become even more abstract, such as one link of the chain or even a raised line drawing, just as print and braille words are an abstraction of the physical and concrete things they represent.

Once the child is demonstrating the ability to use symbols they can be used to communicate planned activities, make choices, and express preferences. They can also be used to create functional routines and reasons for practicing routes, such as going from the classroom to the playground to reach the swing, or visiting the office to deliver a daily attendance record as part of a job routine. These activities can then be reviewed with the symbols to “talk” and communicate about the experiences of the activity; this further develops concepts, literacy, and a sense of understanding and control within the environment as well as the social benefit of sharing about an event.

Experience is the Best Teacher

Let safe accidents happen. We learn from mistakes and if we prevent a child from having accidents, we are depriving them of the opportunity to learn from the mistake or accident. If a child is walking on the playground and tumbles on the ground due to a change in

elevation, they learn what it is to fall, they learn how to get up, and with enough occurrences they learn to shift their balance and prevent themselves from falling. It has to be lived, to be learned. Certainly there are some accidents that are beyond the scope of safety, such as the fall from the top of the swing set or stepping into a street with moving vehicles. These are indeed areas the adult should intervene. But, if an accident will not result in bodily harm it can be an opportunity for learning to occur. Sometimes we pre-teach a skill to a child, such as a protective technique that includes bringing the hand up and in front of the head to prevent bumping into a table when bending down; generally the skill is only truly acquired when the child bumps the table with their head and is able to make the connection within themselves that bringing the hand up before bending down could prevent the bump in the future. If as adults we always provide the prompt or cue to implement the protective technique for them to avoid bumping their head, we are interfering with the natural learning process. There are certainly times we have to help the child to process the event and connect the technique with the desired outcome, but eventually they must learn to self-initiate the technique for it to be effective and having the “safe” accident happen is truly the best teacher.

Celebrate the Successes

There are many “milestones” that are printed in books but it is important to keep track of personal “milestones”. The first time your child rolls over and is able to get to a toy, it is a milestone. Reaching an arm out to touch something that draws their attention is a milestone; it warrants celebration and a note in a family journal. These celebrations of successes in life are at least twofold. They help us track the

succession of accomplishments that your child has and they help us to see how far they have come. Sometimes, in the day to day challenges we forget how far we have come, how many challenges we have in fact overcome. The

awareness of growth helps us to have confidence that we will continue to move toward greater levels of independence and to remember “the best is yet to come!”

Element Arrangement on a Tactile Graphic Document

Patrick Van Geem, TVI, Educational Consultant,
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The author discusses standards and practices in tactile graphics, along with some related braille formatting including information relevant to the use of Duxbury and the Tiger embosser

Keywords: Braille Production, Tactile Graphic Production, BANA template, Duxbury, MathType

In 2011, the Braille Authority of North America (BANA) published a book titled Guidelines and Standards for Tactile Graphics, 2011. The publication can be downloaded as a PDF file for free from the tactile graphic section of the [Braille Authority website](http://www.brailleauthority.org/tg) (<http://www.brailleauthority.org/tg>).

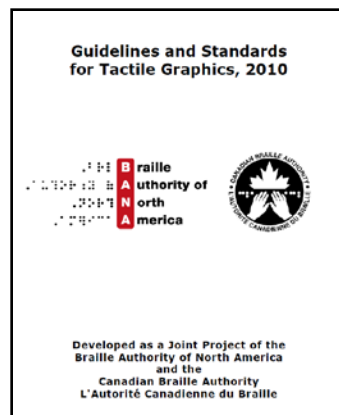


Figure 1: Front cover of the BANA Guidelines and Standards for Tactile Graphics, 2010 book.

The book explains the braille formatting style of elements on a worksheet or textbook page (headings, titles, list, directions, paragraphs, etc.) and their placement arrangement on a tactile graphic document. The first seven units are of particular importance. Following standards explained in these units could generate school-based tactile graphic documents similar to layout placements in textbooks and/or testing materials.

Responsibility to the Student

The production of school-based worksheets and reference materials have always included some formatting structure, however the tactile graphic layout and formatting styles have varied greatly. The concern was that school-based tactile graphic document layout differed from testing material graphics and textbooks. Teachers of students with visual impairment would teach students how to read and interpret tactile graphics that appear on state high-stakes testing materials while receiving worksheet documents

from local production centers in a different format. This situation could add to the cognitive load of the student.

Cognitive Load

Cognitive load is essentially how much thinking a person needs to do during a task or activity. A student with a visual impairment has to develop skills in three areas in order for him to learn content within the instructional environment. The skill set includes:

- Knowledge of Preferred Assistive Technology
- Prerequisite Knowledge of Content
- Clarity of Format and Layout Structure (readability)

Reduction of cognitive load of the student depends on how familiar he is with skills required in each of these areas to actually learn the content.

Braille and tactile graphic documents produced in a consistent format, regardless of the information content (textbook, high-stakes testing, or school-based documents), means that students only need to learn one formatting and style layout. Since textbooks and high-stakes testing materials follow the guideline standards, it would also make sense to develop school-based instructional materials this way. Predictable layout on all documents can reduce time spent searching, retrieving, skimming and reviewing information. The student can spend more time learning the content instead of *understanding* the layout of a document.

The Document Elements

Regular print worksheets that include an illustration usually consist of a series of "document elements". These elements make up the format of the worksheet. In print versions, the

layout of these elements varies greatly. Some common elements used in printed worksheets are:

- Running Headings
- Titles
- Headings
- Paragraph Headings
- Sidebar "special interest" textboxes
- Captions
- Content Information
- Example Boxes
- Illustrations
- Legends (Keys)

Here is an example of a 6th grade math school-based worksheet:

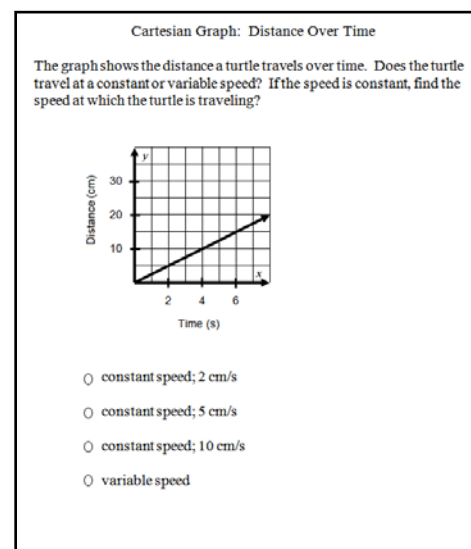


Figure 2: School-base Mathematics Worksheet that includes these elements: title, question/information, a Cartesian graph, and four Scantron answer choices.

Tactile Graphic Document Arrangement

The first number in parentheses indicates the cell in the first line at which the characters begin, the second number in parentheses indicates the beginning cell if there is text run over on the following lines.

- Title (Centered Heading)
 - Caption Information (1-3)
 - Directions (5-3)
 - *Questions(1-5)
 - Answers (3-5)
 - Transcriber's Notes Symbol (in cell 7)
 - Transcriber's Notes (7-5)
 - Key Symbol (7)
 - Blank Space
 - Title (3-3)
 - Key Information (6-8 text format)
 - Letter Label (2 lower case letters)
 - Tactile Graphic Illustration (close to left, aligned with inline text)
- * If there were only questions without answers then the format number combination would be (1-3).

If there is room for all content on one page, the same 6th-grade math worksheet (displayed below) contents elements arranged according to the BANA Guidelines and Standards for Tactile Graphic, 2010.

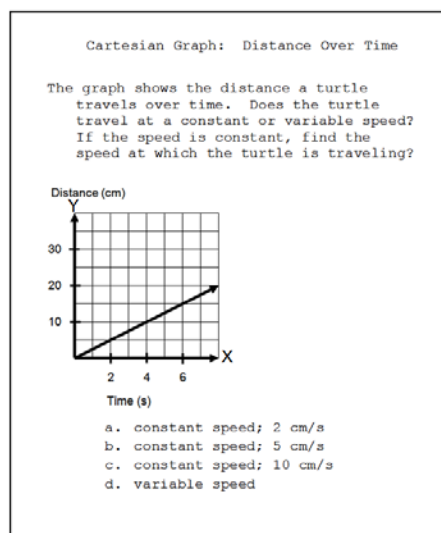


Figure 3: School-based worksheet where the elements are rearranged. The order of the arrangement is listed below.

BANA Guideline Arrangement of Elements on a Tactile Graphic

- The title is still centered.
- The questions are still above the graphic.
- The questions begin in cell 1 and runover in cell 5 (1-5).
- The answer choices are still below the graphic.
- The answer choices begin in cell 3 with runover in cell 5 (3-5).
- The answer choices are listed as a, b, c, and d.
- The graph illustration is below the question/answer section of the document and is left justified.
- The x label is just to the right of the x-axis arrowhead
- The y label is just above the y-axis arrowhead.
- The y-axis identifier is above the y-axis line.
- The x-axis identifier is below the x-axis numeric indicators and aligned with the left-most numeric indicator on the x-axis.

Preparing the Tactile Graphic Document Illustration

Below is a typical mathematics worksheet from a 6th grade class. When a braille production center receives this worksheet via email or hardcopy several decisions are considered before producing it as a tactile graphic document.

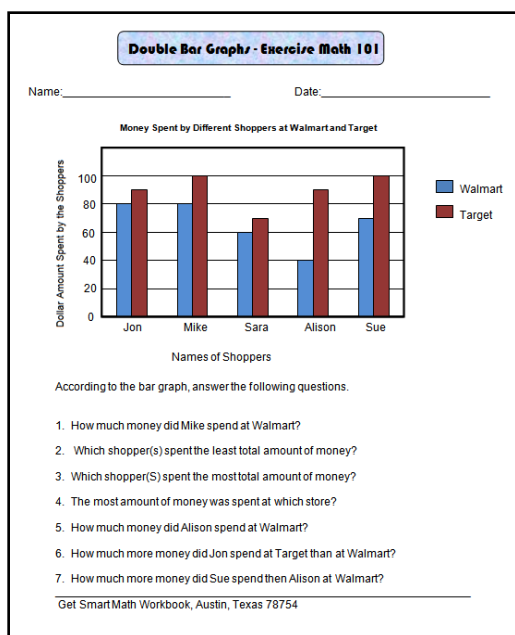


Figure 4: School-based Mathematics Worksheet that contains from top to bottom: title, name and date blanks, double bar graph, directions , seven questions and source information.

According to the Guidelines and Standards for Tactile Graphics book Unit 3, Section 3-3, here are some questions to consider:

- What text needs to be included on the graphic?
- What text or illustration can be eliminated?
- What needs to be resized?
- What can be distorted or consolidated?
- How to separate the document components if needed?
- Are transcriber's notes needed (explaining changes in format or description to support graphics)?

Elements to consider for production are identified as these 11 on this particular print document.

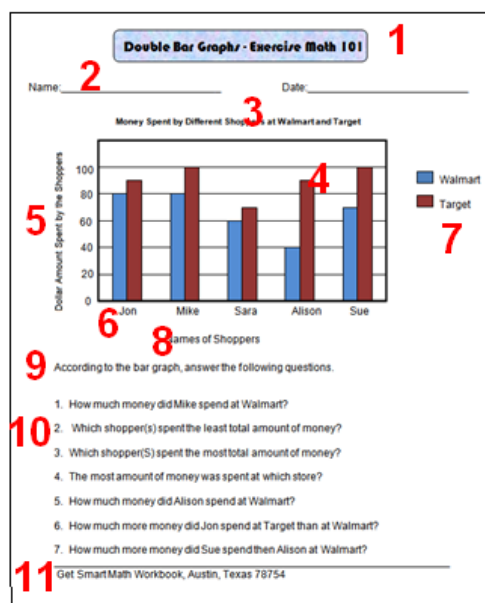


Figure 5: School-based Math Worksheet; 1-11 numbers are positioned next to or over particular style elements contained within the document.

- Running Heading:** This may be eliminated but the math teacher needs to be consulted first before this is done. This not a decision the braille production personnel should make. It is the decision of the teacher of record.
- Name and Date fill-in-the-blank:** This can be (and should be eliminated) without requesting consent of the teacher.
- Title:** The title of the tactile graphic is the print title of the bar graph. This is centered as the first element on the tactile graphic. The braille text is styled as a centered title.
- The **illustration** is placed in the same position as textbook example or in high-stakes state-wide test problem. The illustration as a tactile graphic will be a larger scale than the print version. It is also left justified.
- The **y-axis information** is never vertically displayed on a bar graph document. It is positioned above the y-axis line, in line with the vertical line numeric place marker labels,

6. The text-based **x-axis place maker labels** may need abbreviated two letter labels in order for it to fit on the appropriate place maker.
7. The **legend** just to the right of the illustration will be part of a key on the tactile graphic document. Never use the word "legend". It is always "key" on a tactile graphic.
8. On the tactile graphic document the **x-axis label** needs to align with left-most x-axis place maker label.
9. This is a **direction** on the activity the worksheet offers (answer questions on this worksheet). It is styled as in the braille document as starting in cell 5 with run over in cell 5 (blocked). In a Nemeth (math) document the first word in the sentence starts in cell 5 with runover in cell 3 (5-3).
10. The **questions** are considered a list of items. It is a level 1 list (has no sub list). It is styled in braille with the first left character beginning in cell 1 with run overs beginning in cell 3. If there are **questions with answers**, these are considered level 2 lists. The question starts in cell 1 with runover in cell 5 while the answers start in cell 3 with runover in cell 5.
11. This is a **source**. This is usually information about the publisher. It can be eliminated from the braille (tactile graphic) worksheet.

This document is basically divided into three sections:

- Content
- Transcribers note (if needed)
- Tactile Graphic

Putting It All Together

A tactile graphic document can be divided into sections; the content information section,

transcriber's note and key section, and the tactile graphic illustration section. A document containing these sections will usually consist of multiple pages, especially if there is a transcriber's note with a key. A tactile graphic (same for textbooks and high-stakes testing materials) will always list the sections with the content component first at the top of the document, followed by a transcriber note and key, and ending with the actual tactile graphic illustration.

Content Page

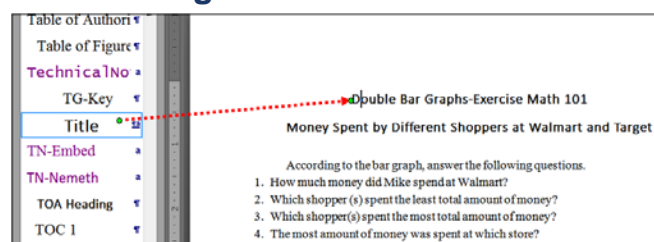


Figure 6: Screen Shot of a Word Document. The Styles task pane is activated with an arrow dash line starting at the Title style and pointing on the Word layout at a line of text that is changed to that particular style.

The content section consists of text information that can be translated into braille. Titles, headings, directions, captions, questions and answers are a few examples where braille text is directly entered on a Word layout. Each text element is then assigned a BANA template style. It is now saved in Word and closed. Be sure to save it as a **.doc** (Word 97-2003) document instead of the default **.docx** (Word) document.

Next it is opened in Duxbury 11.2. At this point the text is translated into braille. **Be sure to include at least one MathType number in the text or else it will not translate numbers to the questions in the Nemeth numbering format style.**

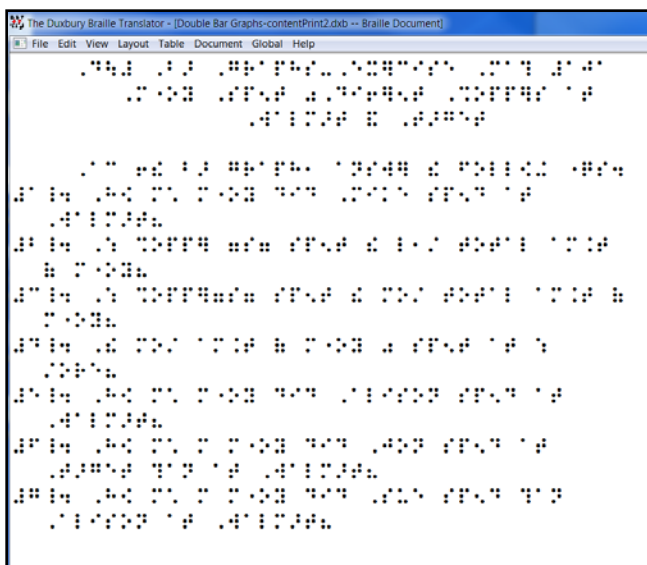


Figure 7: Screen shot of a Duxbury layout window with text translated into a braille font

Check again for braille formatting as well as braille text errors within the document.

Corrections may have to be entered manually by the six-key entry method that includes the use of these keys s-d-f-j-k-l. Cells 1,2,3 are keys f,d,s and cells 4,5,6 are keys j, k,l.

Formatting the Tiger Way

On documents prepared for Tiger translation and embossing, all braille styles need to be formatted manually. One way to format manually is to activate the gridline and set vertical and horizontal spacing at .25". This width is somewhat similar to the width of a braille cell. Doing it this way makes it easier to count blocks to the correct placement of each braille format element. Configure and activate the gridlines by first opening the "Drawing Grid" dialog window in Word.

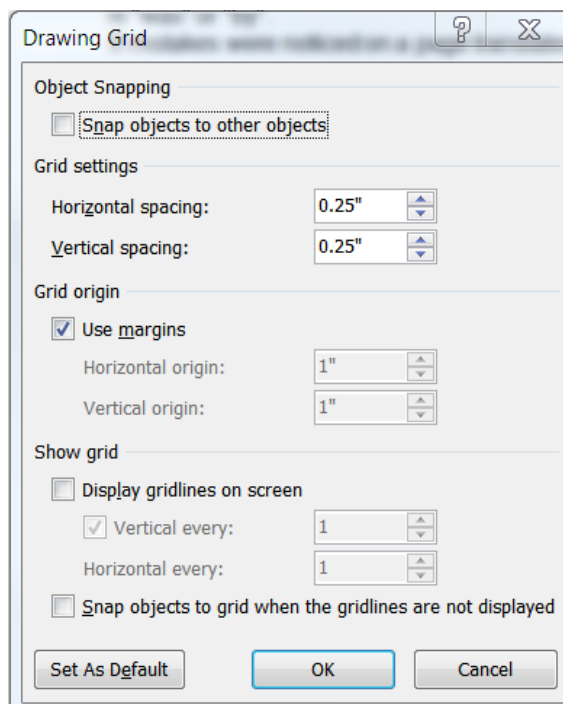


Figure 8: Screen Shot of the Drawing Grid Dialog Window.

Braille Formatting Process Using the Tiger Software Suite for Translation

- Set the grid setting spacing to .25" for both horizontal and vertical.
- Set the margins at 1" then check "Use margins".
- Enter the information (all information) first at the left margin (left justified).
- Translate using the Tiger Software Suite.
- Activate the gridlines.
- By using the spacebar and Enter keys, properly place content according to the
- braille format guidelines.

Take a question and answer combination like the example below. Since this combination is really a level 2 list, the question is formatted 1-5 while the answer choices are formatted 3-5. The first character of the question is in "block" 1(left side of the document) with runover starting in block 5. The answer choices start in block 3 with runover in block 5.

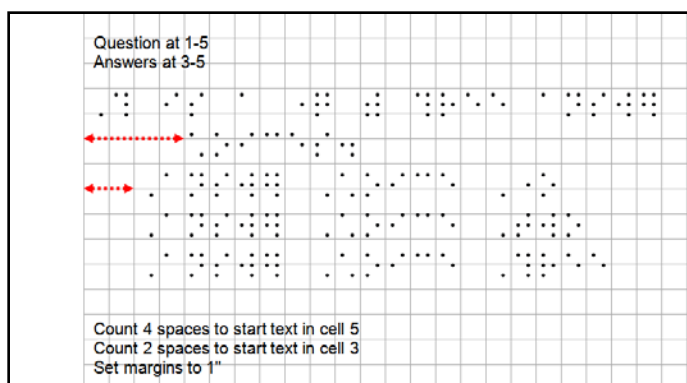


Figure 9: Part of a Word Document with the Gridline Activated. The information on the display contains the words: question at 1-5, answer at 3-5, count 4 spaces to start text in cell 5, count 2 spaces to start text in cell 3 and set margins to 1". Braille text is also on the Word document with the first line starting in cell 1, the second line starting in cell 5 and the third through fifth line starting in cell 3.

If mistakes were noticed on a page translated by the Tiger Software Suite, braille can be typed in using the regular letter keyboard except for contractions and special symbols.

Entering these symbols requires a working knowledge of ASCII. Usually shift plus a number key represents certain contractions or symbol in braille, such as ! representing "the" or < representing gh. Number keys also represent contractions: 1 is "ea", 2 is "be", 3 is "con", 4 is "dd" or "dis" or ".", 5 is "en", 6 is "!" or "to" or "ff", 7 is "were" or "gg", 8 is "?" or "his", 9 is "in", 0 is "was" or "by".

This chart displays the special character key symbol and its braille contraction equivalent.

Braille ASCII	
= = for	
~	, capital
! the	< gh
`	. decimal
@	> ar
# able	/ st
\$ ed	? th
% sh	\ ou
^	; be
& and	: wh
* ch	'
(of	" comma
) with	.
_	[ow
- com] er
+ ing	

Figure 10: Screen shot of a Braille ASCII Chart

Transcriber's Note Section

If a transcriber's note is needed to explain the key, this section is followed by the content (directions, questions, answers, and other information) and comes before the actual tactile graphic illustration. A transcriber's note begins in cell 7 with the transcriber's note symbol. Wording on a transcriber's note needs to be in the vocabulary understood by the student (i.e., second-grade vocabulary for a second grader).

The ending transcriber's note symbol (same symbol as the opening) is entered right after the last word in the key. There is neither a blank space following the beginning symbol nor before the ending symbol. The symbol consists of dot 6 in the first cell and dot 3 in the next cell.



Figure 11: Screen Shot of the Transcriber's Note Symbol. The first cell has a dot 6 and the second cell contains a dot 3.

The word "Key:" (k is capitalized and a colon is included) must follow the transcriber's note on the next line (no space) starting in cell 7. Key information follows after a blank line space. If the key contains tactile graphics such as a line, point, or area fill patterns, then the text content starts in cell 6 with runover in cell 8. Area fill pattern needs to be at least one inch in length.

Example of the Transcriber's Note and Key Page

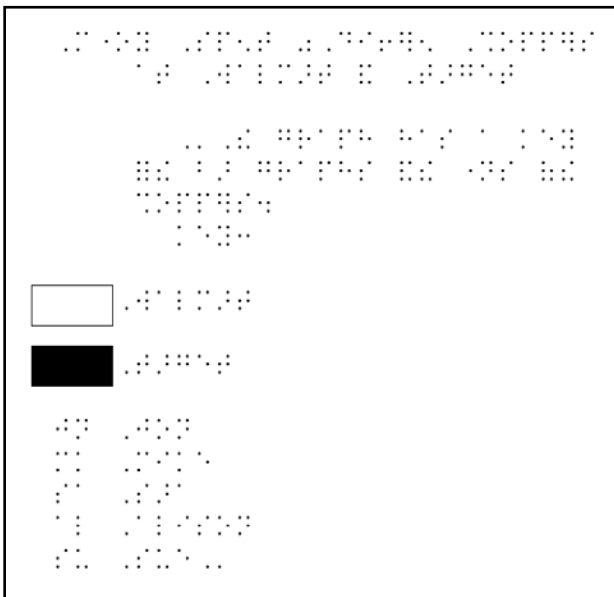


Figure 12: Screen Shot of a Braille Transcriber's Note Section Document.

Tactile Graphic Section

On the tactile graphic page, all text and labels are positioned manually. It is best to "float" the text in textboxes.

The title of the document is repeated on all pages of the worksheet. They are a centered heading.

The number sign is used for the y-axis information if is not "understood" that only numbers are placed at each tick marker

(because the x-axis information are not numbers)

The illustration is aligned left justified with left-side labels set on the left margin. The X identifier is below the first numerical (or letter) tick marker on the left while the y identifier is just above the y axis line aligned with the numbers (or letters) just left of the y axis line.

All key information (lines, points, letter combinations, area fills) have to match the content on the tactile graphic.

Example of the Tactile Graphic Page

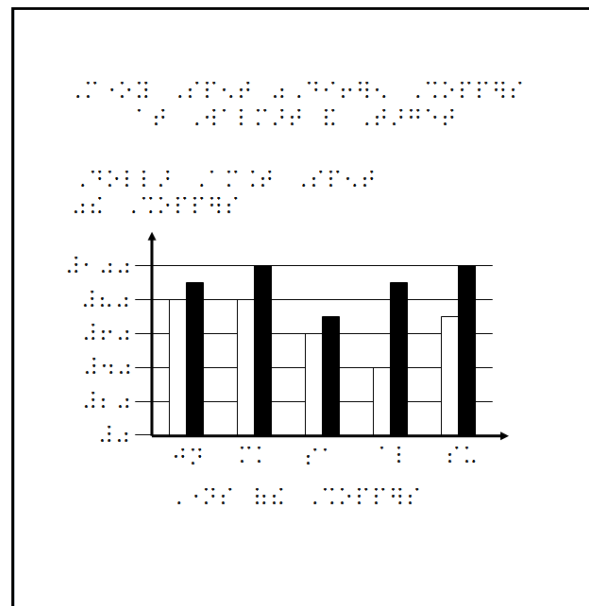


Figure 13: Screen shot of a tactile graphic section document that is translated into braille.

Braille Formats Commonly Seen on a Tactile Graphic Worksheet

The following is a list of the braille formatting styles that you typically use on a document containing tactile graphics. The first number in parentheses indicates the cell in the first line at which the characters begin, the second number in parentheses indicate the beginning cell if there is text run over on the following lines.

Style Task Pane	Listed in the Word BANA 2014 Template Style
Heading	Centered H1
Cell 5 Heading	Heading H2 (5-5)
Cell 7 Heading	Heading H3 (7-7)
Paragraph	3-1
Paragraph-Blocked	1-1
List (no sub-levels)	1-3
List (1 sub-level)	1-5, 3-5
List (2 sub-levels)	1-7, 3-7, 5-7
List (3 sub-levels)	1-9, 3-9, 5-9, 7-9
Transcriber's Note	7-5
Select All (or Word)	Uncontracted (blue color lettering)
Directions (not in Nemeth)	Directions (5-5)
Directions (Nemeth)	Directions Nemeth (5-3)
Spanish	Spanish (red color lettering)

Texas Works on Implementation Plan for Changes to the Braille Code

William Daugherty, Superintendent, Texas School for the Blind and Visually Impaired

Superintendent Daugherty shares information on changes to the braille code. He reviews the steps to make the transition from English Braille American Edition (EBAE) to the Unified English Braille code (UEB).

Key words: blind, visually impaired, braille, Unified English Braille (UEB) code, TSBVI, TEA, the Braille Authority of North America (BANA)

The Braille Authority of North America (BANA) has adopted changes to the braille code consistent with most of the rest of the English-speaking countries. BANA is composed of a group of experts and stakeholders involved with braille, and they are the recognized body who make changes to the braille code as needed. The code currently in use in North America is known as English Braille American Edition (EBAE). The new code is known as the Unified English Braille (UEB) code. This change to UEB represents the most comprehensive change to the code in decades, and its intention was in part to address the limitations EBAE had to adapt to the continuous changes in language and to the growing interface between braille and technology.

Although UEB looks like EBAE for the most part, there are some significant changes that will require readers, teachers and transcribers alike to study and become familiar with the appearance of some new signs and the elimination of some others. BANA chose to

retain the existing mathematics code called Nemeth code, but UEB also has mathematics and technical code that is likely to find its way into usage based upon decisions by teachers at the instructional level.

Over the past year all states have been developing plans for the implementation of UEB. These plans include things such as how to train teachers, students and transcribers in the new code; when and how to make changes to textbooks; when and how to make changes to state assessments such as the STAAR; and in some states like Texas, when and how to develop a UEB-based braille proficiency test for those seeking to become teachers of students with visual impairment (TVI's).

Texas has developed a very good plan, still in the draft stage, which the Texas Education Agency (TEA) will consider for adoption. This plan lays out the many steps it takes to get this accomplished in the form of a timeline. This timeline culminates in the Spring of 2017 with the goal of having met wholly, or in large part, full implementation of the UEB code in Texas.

It is important to note that during this transition period, which reasonably can be predicted to go

beyond the Spring of 2017 on several fronts, that TEA, our Education Service Centers, TSBVI and school districts across the state will figure out ways to minimize the impact on students trying to learn a new code while having books, tests and other materials in the “old” EBAE code. For a time it will be common to see materials offered in both codes. Students and parents are encouraged to begin conversations with their

local educational teams because it may be beneficial for ARD committees to make some decisions on what code will be used for both instruction and assessment. More can be learned about UEB at the [BANA website](http://www.BANA.org) (<http://www.BANA.org>), and TSBVI will be regularly posting related information the [TSBVI website](http://www.tsbvi.edu) (<http://www.tsbvi.edu>).

The Workforce Innovation and Opportunity Act

By Scott Bowman, Interim Assistant Commissioner, Department of Assistive and Rehabilitation Service – Division of Blind Services (DARS-DBS)

Mr. Bowman reviews the Workforce Innovation and Opportunity Act and the focus on ensuring that adults and teens with disabilities are prepared to meet the ever changing work world.

Key Words: Dept. of Assistive and Rehabilitation Service – Division of Blind Services, blind, visually impaired, vocational rehabilitation, transition services, supportive employment, qualified workforce

There are exciting changes in the world of Vocational Rehabilitation (VR) as we move into the 21st century. These changes are focused on ensuring that adults and teens with disabilities are trained and prepared to meet the ever changing work world. New federal legislation has been enacted to give every state in the nation new tools to build a qualified workforce. I would like to share some information about this new law and how it will impact people with disabilities.

The Workforce Innovation and Opportunity Act (WIOA) was signed into law by President Obama on July 22, 2014. This law replaces the Workforce Investment Act of 1998 and amends the Adult Education and Family Literacy Act, the Wagner-Peyser Act, and the Rehabilitation Act Amendments of 1998. WIOA makes significant improvements for individuals with disabilities, including students with disabilities as they make the transition from education to employment.

There are three major themes to this law. The first is to be responsive to the business needs of the 21st century. It is important to be able to fill in-demand occupations with qualified workers and to collaborate with employers. The second theme is to emphasize services to students and youth with disabilities. This includes pre-

employment transition services and dedicated supported employment funds. The third theme, is that the Department of Assistive and Rehabilitative Services (DARS) will collaborate with a group of “core partners,” including several programs run by the Texas Workforce Commission (TWC). Together we will build a partnership to ensure that Texans with disabilities will have the support/training they need to be successful in the world of work.

Business Needs

In order to meet the demands of a changing job market, it is important to prepare an educated and skilled workforce. WIOA directs the workforce system to be more responsive to the needs of business and industry, including providing training that addresses the skill needs of specific industries or employers, on-the-job training, customized training, and increased development of employer partnerships. It is necessary that counselors delivering vocational rehabilitation services have a 21st century understanding of the evolving labor force and the needs of individuals with disabilities. Counselors will need to provide consumers training that meets not just current, but also future employer needs; guiding applicants towards in-demand jobs and training that produces the skills that industry needs.

One of the things on which WIOA will measure VR effectiveness is the wages earned by the people we serve. To help in that area, WIOA encourages VR to consider helping eligible qualified individuals to pursue advanced training in the fields of science, technology, engineering, or mathematics (including computer science), medicine, law or business. VR programs have always worked with employers to identify competitive integrated employment opportunities

for individuals with disabilities. The new definition of competitive integrated employment is: full or part time work at minimum wage or higher and with wages and benefits similar to those without disabilities performing the same work and fully integrated with co-workers without disabilities.

Pre-Employment Transition Services

Vocational Rehabilitation agencies are required to make pre-employment transition services available to students with disabilities (in Texas age 10 through 22, which will include DBS transition students) in order to make the transition from secondary school to post-secondary education programs and competitive integrated employment. These services include job exploration counseling, work based learning experiences, counseling on post-secondary opportunities, workplace readiness training, and training on self-advocacy. There will be a focus on internships, apprenticeships and pre-apprenticeships, extended summer work programs, group skills trainings and workshops to address life skills, social skills and the soft skills needed to be successful in a work environment. WIOA requires that VR agencies set aside at least 15% of their Federal VR program funds to provide these pre-employment services.

WIOA also requires that VR programs will spend 50% of their supported employment grant on youth with disabilities (ages 14-24). Supported employment services, including extended services, will be provided to youth with the most significant disabilities in order to assist those youth in achieving an employment outcome in supported employment. The law also focuses on customized employment which is defined as “competitive integrated employment, for an individual with a significant disability. Customized

Employment is based on an individualized determination of the strengths, needs, and interests of the individual with a significant disability...designed to meet the specific abilities of the individual with a significant disability and the business needs of the employer... and carried out through flexible strategies.”

Collaboration of Core Partners

DARS and TWC are working closely to develop a framework for increased coordination at the state and local levels. DARS is coordinating with the Texas Education Agency to assess and

implement the provisions of WIOA related to serving transition-age youth. We will also continue to collaborate with business throughout the state to develop a business relations system that is responsive to the needs of businesses and consumers.

We are excited to see how these changes will increase the opportunities for Texans with disabilities to be successfully employed.

Parent Companion and Brochure

Parent Companion

Excerpt from Parent to Parent website

Announcing Parent Companion:

Texas Parent to Parent (TxP2P) & Region 13 Education Service Center are very proud to introduce a new website for Texas families of children birth to 5 years old providing support and information in a parent to parent manner. It includes many articles for families and videos of parents sharing ideas and support. Please check out the [Parent Companion website](http://www.parentcompanion.org/) (<http://www.parentcompanion.org/>)!

Eye Find Brochure

Are you a VI professional in Texas trying to get the word out about services to infants and toddlers with visual impairment? Are you a parent or other advocate trying to help another parent access educational services for their child with a visual impairment? Do you have connections to pediatricians, therapy clinics, ophthalmologists' offices or ECI service providers used by families of children with disabilities? Please help get the message out! In Texas, we know that our youngest children with vision impairment and deafblindness are under-served, especially those from birth to age three. Use this brochure, print it and distribute it far and wide! Laws and services differ from state to state; this information is specific to services in the state of Texas. [Eye Find brochure](http://www.esc11.net/cms/lib3/TX21000259/Centricity/Domain/187/Eye%20Find%20Brochure%202013%202014%20SLSBVI%20SFASU.pdf) (<http://www.esc11.net/cms/lib3/TX21000259/Centricity/Domain/187/Eye%20Find%20Brochure%202013%202014%20SLSBVI%20SFASU.pdf>)

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