**Accessible Instruments**

*Specified Learning Disabilities*

Learning disabilities (LDs) are common and often invisible; you may not be able to tell whether someone has an LD. Many students with LDs struggle with executive function, the cognitive processes that help us regulate, control, and manage our thoughts and actions. For example, students with LDs might experience organizational difficulties, have difficulty focusing, or fear being embarrassed in front of peers. These students may forget their pencils, not notice or remember the key signature of a piece of music, or forget their instruments at home or the bus stop. They are not irresponsible; they have a learning disability. Some students with LDs struggle with reading traditional music notation. This will be discussed later in this chapter; just know that most prefer to learn music by ear and appreciate having recordings along with the music.

 Dysgraphia (or ‘messy handwriting.) affects students’ fine motor control. Consider this when placing them on a woodwind, violin, viola, ukulele, or small percussion instrument. Teachers may need to provide longer wait times when introducing new fingerings, patterns, and licks that require time to master. Fingers might miss the right fret or key.

Some of these students may have trouble with visual perception or spatial skills. Traditional fingering charts are difficult to decode because they don’t look the way the instrument does in the student’s hands. You might notice students turning the instrument around to make it look like the orientation of the fingering chart.

Dyspraxia (‘clumsy child syndrome’) affects gross motor coordination. Provide additional practice time to work out tricky parts or maneuvers. For example, coordinating a wah-wah pedal might be awkward until the musician masters the best position for their foot and pedal. Drum sets with multiple toms or cymbals need to be consistently set up the same so the student can easily see and reach them. Consider this when placing them on large percussion (bass drum or timpani), cello or string bass, large mallet instruments (Orff included), or in some cases trombone. These students may have trouble with marching band or choreography. Younger children especially get in trouble for bumping into others and might have instruments that show wear and tear before others owned by their peers.

There are also students with auditory processing difficulties. I worked with a child who had trouble processing speech when the teacher’s voice fluctuated away from one pitch. Ziegler, et al. (2012) discovered a link between impaired pitch processing and abnormal phonological development in children with dyslexia. Auditory perception of rise time is related to perception of musical meter structure and connects to the development of phonological and literacy growth in children. A primary sensory impairment in developmental dyslexia occurs in tracking the lower-frequency modulations in the speech envelope (Huss, et al., 2010).

Keeping a steady beat is also thought to be impacted by dyslexia. In Goswani (2012), Huss et al.’s (2010) similar study that was expanded to reading-level matched controls summarized that “individual differences in perceiving patterns of beat distribution, in both language and music, are intimately connected with reading development and dyslexia” (p. 1373).

*Speech Disorders*

Students with ankyloglossia (‘tongue-tie’) have difficulty playing articulations on wind instruments. Tongue-tie is a string of flesh connecting the tip of the tongue to the bottom of the mouth.

Students who appear to be non-speaking, which can occur in many types of disabilities, are not necessarily non-verbal. Most can communicate through writing, sign language, or other means. Speak directly to the student instead of to their aid or interpreter.

*Intellectual Disability*

Students with intellectual disabilities (IDs) include students with syndromes, i.e., Down, Williams, or Fetal Alcohol Syndrome. Students with IDs may struggle with reading traditional music notation. Solutions will be discussed later in this chapter. Students may forget how to put together their instrument, their routines, where to put away their instrument, and where and when concerts take place. They do best when routines stay the same, and after much repetition, they learn them. Until they understand how to function in your class/ensemble, pair them up with a peer who can look out for them. Support them as a member of an ensemble that has a certain way of functioning. Perhaps there is a procedure for using the restroom, where to sit or stand or just how and when to ask for help.

 Individuals with Down Syndrome typically have short fingers. They may have a difficult time playing barred chords, for example, or covering the holes on some woodwind instruments, or playing larger stringed instruments. Provide them with extra time to learn how to play these instruments or others that they are interested in learning.

 Fetal Alcohol Syndrome is often a combination of ID and behavior disorder. Depending on severity, the student may be restless and have difficulty focusing. They may be easily frustrated and give up when the first time proves unsuccessful. Engage them in an instrument that will sound good and require minimum practice. Electronic instruments like the Orba, Artiphon, Skoog, and various percussion controllers sound good right away and are less frustrating to master; however, with patience, any student can play any instrument. The first three have many online demonstration videos that should be viewed before purchasing the device. Perhaps you can also share them with the student’s special educator to make final decisions.

Electronic instruments are one of the best ways to provide ID students with a meaningful instrument option that reduces frustration and sounds good with their group. Later in the chapter I will discuss classifying these instruments and other devices as assistive technology to receive Federal funding to cover the costs.

*Emotional or Behavioral Disorder*

Like Fetal Alcohol Syndrome, children with emotional and/or behavioral disorders (EBD) can become easily frustrated. Psychologist Martin Seligman (1975) first identified a behavior he later termed *learned helplessness.* People with depression may easily give up; this behavior has also ben observed in people with disabilities. “Persistence is a byproduct of success, and if success is repeatedly out of reach of the student, he or she learns not to try” (p. 23). “Students exhibit *learned helplessness* when there is not a good match between learning objectives and student attributes; therefore, one single set of standardized objectives cannot be expected to meet the unique learning abilities of individual students in inclusive classrooms” (Stainback & Stainback, 1996, pg. 210).

Give lots of personal attention and praise. Call home frequently whenever the student has even a small success. Getting positive phone calls from school can shift the home environment in ways we can never know. Imagine a child who is often angry. This child antagonizes siblings, is rude to adults, and refuses to comply with rules and routines. Sometimes teachers call from school asking parents to pick up the student because the behavior is so out of control that adults feel like the child may be disrupting or even dangerous to a point that the school cannot manage. If the teacher calls and relays that the student played a beautiful, improvised solo in jazz band, or kindly helped a peer with playing a hand drum correctly in general music, it can make a big difference to the caregiver—for the child and their family to know that they can do nice things for others, that they are talented in music. It creates a sense of pride that might not have been there before.

Students with EBD can display internalizing or externalizing behaviors. Externalizing behaviors are fighting, property destruction, stealing, etc. Internalizing behaviors are much more serious and sometimes lead to suicide or planned violence toward others. Students with depression or anxiety can seem to be introverted and harmless, but sometimes they are so angry or sad that they take steps toward relieving their emotional pain. Personal attention and praise are important and demonstrate you are sincerely interested in the student as a person. Notice when they miss school and welcome them back when they return. Music therapists work with EBD children frequently. If your district has a music therapist, perhaps they might receive services if it is written into the IEP. For example, a student who becomes easily frustrated playing an instrument could take the instrument and meet with the therapist in order to demonstrate what is frustrating them. Perhaps the therapist is able to identify the problem and develop a strategy for dealing with the frustration in a more acceptable way. For example, maybe the violin doesn’t hold tune. Perhaps the therapist or teacher can demonstrate to the student ways to get the tuning peg to not slip. If the peg continues to slip, it might need replacing. The therapist can work with the student on how to approach the teacher to ask about what to do about the peg. The discussion should be calm, and the teacher should listen carefully and respond with a solution or suggestion that will help.

When talking to a student who is very upset, always begin with listening to them explain what happened first. You must not interrupt or make any judgements while the student is talking. When they finish, repeat back what you understood them to say: “Did I get this right, you are saying that your violin peg keeps slipping and you noticed other students looking at you? You don’t like to be looked at and you don’t want to play the violin anymore, is that correct?” (Allow the student to clarify if they want to.) Then respond, “I can only imagine how frustrating that must be when you suddenly start playing out-of-tune and others look at you. Can I make a suggestion?” (Honor the student’s wish for help or refusal. If they refuse, you might find a mutually agreed on time to check back at the end of the day to see if they are open to suggestion. In the meantime you might tell them that you are going to look for good YouTube videos of tips for fixing tuning pegs that won’t stay.) More difficult discussions might require waiting until the student has cooled off. Always let them talk first, then when it seems that they have expressed everything they wanted, ask if you can talk next. See if you can get them to repeat back what you said. Complex discussions might take some time to process through, but students appreciate the opportunity to be heard and the message that you want to help.

*Autism Spectrum Disorder/Neurotypical*

It is a caring teacher who takes the time and interest to ask the student which term they prefer out of ASD and Neurotypical. Many individuals with autism view their behaviors, interests, and ways of communicating and socializing as a kind of giftedness they are proud of. Some have perfect pitch, excellent skills in identifying errors and how to fix them, and the ability to read music fluently and memorize and play music accurately after hearing it one time.

Students with Autism Spectrum Disorder (ASD) can play any instrument; however, many individuals with ASD also experience Sensory Processing Disorder, a secondary symptom that, among other senses, makes sound very irritating if it is too loud or high frequencies are present. Some wear ear plugs or noise cancelling headphones. These help, but there are several solutions that can be used with percussion that remove barriers to playing or listening to certain instruments or ensemble. Drum set cymbals can easily be replaced with low volume cymbals. These are cymbals with holes in them that serve to reduce volume and high frequencies. They work beautifully and sound good. Several cymbal makers produce these types of cymbals.

In addition, drum set heads can be replaced with low volume drumheads. The problem is these are not an easy change and instead would need to become the new drumheads for the set. Remo makes several djembes, tubanos, congas and bucket drums with removeable heads that can be changed to *Not So Loud* heads. They work well and are easily changed.

Orchestral strings can always play with mutes on to reduce high frequencies. Of course, to play with mutes on all the time is not ideal. Often the individual can become accustomed to the sound after a period and no longer needs the adapted instrument or ear plugs.

Sensory issues can impact the feel of the instrument as well. For example, beginning guitarists might object to the feeling of a scratchy string under their sensitive fingertip. I recently discovered a product called Musician’s Practice Glove (musicianslive.org), that reduces the feel of the string. Sometimes the feel of a rough string in particular becomes very irritating. The glove provides a soft barrier between the finger and the string and comes in four sizes.

*Hearing and Vision Loss*

Very few individuals with hearing loss have no hearing at all. Most hear low frequencies, except people with cochlear implants. If the cochlear implants are removed, the person hears nothing. There are many simulations online of what music sounds like with different levels of hearing loss with and without hearing aids, but perhaps the most distorted music samples are those of the cochlear implant users. Make sure to check out the simulations as they will help you not only to recommend instruments that they can both hear and feel vibrations of, but also guide you toward adapting music, considering the best instruments to sit the student next to while making sure the conductor or leader is always clearly in view.

Soundbrenner makes a wonderful device, a vibrating metronome that is synched up with an app on a phone and can accommodate up to four devices. Not only is the beat felt but the device can display flashing-colored lights. Tempos can be controlled from the phone or changed right on the device. I have successfully used them in a rock group with a drummer who had ID and hearing loss. He was able to keep a steady beat by wearing the Soundbrenner Pulse.

*Vision Loss*

Individuals with vision loss can play any instrument if there is a strong tactile connection with the instrument. For example, open hole flute is great because the individual can feel where the fingers go and play with no special adaptations. I’ll discuss Braille music notation equipment in the music notation portion of the book later.

*Physical or Orthopedic Disabilities*

This category is likely to take the most time to individually adapt for each person’s abilities and disabilities. It will be helpful to talk to the physical and/or the occupational therapists assigned to the student. They can accurately describe the abilities of the student. You must ask questions when trying to determine if the student will be able to maneuver rarely used keys and techniques for the instruments. For example, there are certain saxophone keys that take little more finger strength to operate. Little fingers are often the weakest of the hand. If your student has muscular dystrophy, it may be impossible to use that finger with force.

*Adapting Instruments*

Under the Individuals with Disabilities Education Improvement Act (IDEIA, 2004) all children should be able to access the curriculum. The law states that an assistive technology device, by definition, is “any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of children with disabilities” (Individuals with Disabilities Education Improvement Act of 2004).

For example, the walk-up guitar stand is a device that securely holds the instrument so the musician can play without needing a guitar strap. The stand can tilt at a variety of different angles, including flat. Assistive technology is a wonderful way to bridge barriers that exist in music classes. If this device gets written into the Individual Education Plan (IEP), it must be provided by Federal funding and the law states that “cost should not be a factor.” But we do know cost is a factor in many of our schools. It is essential that the music teacher makes a case for why the device is the piece of assistive technology (AT) that allows the student to access the curriculum. Emphasize to special educators that the assistive technology you are requesting is to help the student “access the curriculum” and be able to clearly explain why you will likely need to explain why this particular piece of equipment is necessary. Sometimes special educators don’t understand why we are asking for a device., If we can demonstrate what the student is struggling with, i.e. seeing the fretboard, they will better understand.

The device is provided for as long as that student needs it. The device follows the student to the next school and then is turned in to the AT warehouse in your state for other students to use.

AT devices can include a number of items we regularly use in our programs and classrooms with typical students. Stands that are adjustable are the most common. If there isn’t a stand that is commercially available, ask your occupational therapist (if your school has the materials one), if they can build something to properly support the instrument.

Some instruments can be considered assistive technology. For example, at the Illinois State University Laboratory School, the Deaf and Hard-of-Hearing, general music students were most successful playing the Orff contra-bass bars because not only do they vibrate, but their pitch is in the lower frequencies. Most individuals with hearing loss maintain residual hearing in the lower frequencies unless they are cochlear implant users.

Other instruments that could be used as AT are keyboard synthesizers, percussion controllers and synthesizers, low-volume cymbals, short scale guitars, especially mini guitar kits, and some guitars manufactured by Gibson/Baldwin Education under the Maestro brand. They are smaller than the Fender Mini guitars and are a manageable size for musicians who are wheel-chair users. Fender produced a limited number of telecaster tenor guitars with narrow necks. They work perfectly for individuals with Down syndrome that need a smaller neck. Synthesizers and controllers with good sampled sounds allow the user to play an instrument that may not be accessible to them in the acoustic form.

Low-volume cymbals reduce high frequencies helping those with sensitivity to sound. As mentioned previously, Remo makes drums with removeable heads that can be replaced with heads made to be low-volume and accommodate students who tend to hit the drumhead too hard. Short scale guitars are about the size of a baritone ukulele but have six strings and a full-size fingerboard. With some assistance from the OT, this size is very comfortable for wheelchair users and smaller people. Electronic drum sets with mesh heads can accommodate students with low muscle tone and can be played with light finger drumming. Of course, the fact that there is a volume control, is a way to adapt for those who play too loud due to coordination issues.

Two older books that are still excellent resources are *Guide to The Selection of Musical Instruments with Respect to Physical Ability and Disability* (Elliott, et. al, 1982), and *Clinically Adapted Instruments for the Multiply Handicapped* (Clark, 1980). The Elliott book includes data on almost all instruments still used in school programs including modern bands. Data listed include for example, range of motion required for wrist movement, maximum finger pressure, etc. The physical therapist or occupational therapist can use the information in this book to compare muscle flexibility and strength of the student with what is ideally recommended for playing success. The Clark book offers directions for making devices to adapt for several different categories of instruments, including percussion beaters, guitar picks, strap designs, frames and stands.

**Accessible Teaching**

The first important item on your list, before classes even begin, is to create a *Dear Special Educator* letter and place copies in each special ed teacher’s mailbox. If you can get the letters them in the special educators’ mailboxes a week before students arrive, they will have time to fill them out for you. They have an unbelievable amount of paperwork to complete, taking up just about every extra minute of their school day, so often it is harder to get special educators to quickly respond once school starts. They do love their students and want more than anything for them to be happy and to participate meaningfully in all that school has to offer them. In the letter you will list all the different things done in band over the year, trying not to leave anything out. The special educator checks the boxes where her student will have problems and then can leave a comment. This gives you the chance to check in about further strategies.

Co-teaching involves the special educator and the music educator teaching together. This is a very effective model that informs both teachers of strategies that work and do not work. Teaching music is very different than the other subjects and learning environments the students cycle through during their day. You and the special educator meet and decide who will teach which part of the lesson. Perhaps the special educator introduces the lesson and describes the objectives and breaks them down in ways that help certain students in your group. You can watch this being modeled and use it if appropriate. The music teacher takes over and begins the warm-ups. You notice that a fidgeting child suddenly gets up and moves to a different chair across the room and sits down and plays. This happens several times during the rehearsal. It is a bit distracting, but you notice the special educator is involved in the changing chairs. You discover afterwards that the student has ADHD and forgot to take their medicine and is really struggling with sitting still. Being able to move reduces anxiety and allows them to focus better.

Ask your special educators to team-teach with you or if that isn’t possible, watch you teach and then provide ideas that can help. If your special educator plays an instrument, you might invite them to join the band that day.