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ARTICLE

Demystifying adaptive music instruction: insights from music adaptation plans

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Abstract

This reflection explores the context of the emerging field of adaptive music education and the use of music adaptation plans (MAPs) to demystify adaptive pedagogy used for pupils with physical disabilities. It explores the themes that connect the ingenuity and creativity of adaptive instruction across the study of various musical instruments, highlighting three key areas: pupil considerations, adaptive considerations and pedagogical considerations. MAPs offer a structured approach, enabling teachers to adapt techniques and apply creative solutions to connect music education to a historically excluded population of pupils.

Keywords: physical disability; music education; adaptive music education; music adaptation plans

Introduction: demystification

Over twenty years ago, when I first surveyed the literature in both music and special education to find ways to adapt piano lessons for my daughter with one arm, little in the way of research had been done to develop best practice in physically adaptive music pedagogy. I found myself teaching in an ad hoc context, adapting technique and music as she progressed. This was in line with what I had found in the literature; the pedagogical method has been for an individual teacher to design a bespoke instrument or adapted technique on an ad hoc basis for an individual with a disability (Drozdov, 2008; Nabb, 2024**).** However, in the past ten years, customizing instrumental technique to accommodate a pupil's unique needs is emerging as a new specialization in music education. This growth has been facilitated by research and training programs at large universities, such as the Adaptive Music Bridging Program at the University of Melbourne in Australia, and Berklee's Institute for Accessible Arts Education in the United States (Skinner & Debruin, 2025; Tarantal, 2024). In 2011, in the United Kingdom, the One-Handed Musical Instrument Trust (OHMI) began designing and building adaptive devices for pupils with physical disabilities and held its second research conference on physical disability and music education in 2025 (One Handed Musical Instrument Trust, 2025). This is good news for the estimated 1.3 billion people worldwide who experience significant disability (WHO, 2023).

There is difficulty in approaching this topic because the field of music education is so large, and the requirements of different instruments, music classes, and performing ensembles vary greatly. Additionally, special education needs and disabilities (SEND) are expansive as no two pupils' needs are the same. Closely related research has focused on perspectives of school music teachers, expansion of music teacher education in disabilities, and perspectives of physically disabled music pupils, within the context of studying band or orchestra instruments (Bugaj, 2016; Laes & Westerlund, 2018; Nabb & Balcetis, 2009; Robinson et al., 2019).

Some research has been done under the umbrella of music therapy, which is a field situated in clinical music interventions aimed at therapeutic outcomes tied to a variety of social and health

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goals (British Association for Music Therapy, 2025). There has been some overlap, with research and practice done with some practitioners of music therapy and special education combining to create a body of evidence-based practice for therapeutic classrooms and music lessons for people with developmental disabilities. This work is important and should be valued for the contribution it provides. However, there is still a gap in adaptive music pedagogy that is not addressed through those music therapy-SEND channels: How do we best serve pupils with physical disabilities?

In 2012, I co-founded the adaptive music project (AMP), based in the United States. The purpose of this project was to establish best practice in adaptive music pedagogy for pupils with physical disabilities. The primary agent for that work was Cincinnati Adaptive Music Camp (CAMC). This annual camp was held for four years and served pupils with disabilities: amputations, paralysis, limited range of motion, and limited strength. To organize our approach to teaching, I created a prototype of a music adaptation plan that was then used to collect data on how each teacher at the camp was adapting their pedagogy. As the camp grew to offer seven different instruments, I found themes that informed an approach to adaptive pedagogy that could be standardized yet remain individualized for each pupil's unique needs. Thus, the music adaptation plan (MAP), a tool that can be used to guide adaptations and develop individualized pedagogy and technique, was created.

This body of MAPs allowed for analysis of adaptive pedagogy, and I was surprised to see what could be considered guiding principles teachers could use to approach developing an individualized pedagogy for their adaptive pupil. This realization shaped my work as I saw that it could be one way to demystify the process of adaptive pedagogy. MAPs consider the whole pupil and their trajectory of learning, from beginner to advanced player, with three distinct areas for consideration related to their unique needs: Pupil, adaptive and pedagogical.

Pupil considerations

Finding a teacher willing to teach adaptively was what prompted me to start CAMC. As a piano teacher, I could teach my daughter piano, but when her sister, with arms locked straight and limited range of motion, wanted to study cello, I was unable to find a music teacher. While analysis of the MAPs suggested that pupils with prior musical study, such as ear training or musical literacy, were able to transfer those skills like their peers without physical disabilities, additional considerations influenced progress. Securing a teacher willing to teach adaptively, determining how best to adjust technique, and collaborating with individuals who can design and build specialized devices were challenges these pupils needed resources to address.

A tension emerges when considering the equity of opportunity for adaptive pupils, as parents who are willing to research and seek out opportunities for pedagogy and support are key components in the advancement of adaptive music pupils. Adaptive pupils will likely need access to bespoke devices and instruments. This support can come from organizations such as the OHMI, which focuses on developing and adapting musical instruments for people who have a physical disability, or the AMP's partner organization, May We Help (maywehelp.org), a charity that creates custom solutions for individuals with physical disabilities. Internationally, the growth of the maker movement offers more opportunities for collaboration to create bespoke devices. Makerspaces, sometimes called FabLabs or innovation labs, are locations often found in a library, where people gather to co-create and work on projects that use technological skills and creativity (UK Government, n.d.). Additionally, many opportunities can be found through universities and schools.

These barriers take internal motivation and positive pupil disposition to persevere. Learning to play the instrument in a fulfilling way often takes longer when obstacles are present, making it essential that the motivation to play is as strong as the persistence needed.

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Adaptation considerations

When a pupil is ready to learn, the teacher's first role can be to observe and assess their differences, allowing a picture of the pupil's abilities to emerge. For instance, for piano, I look at the range of motion, both vertically and horizontally, from the shoulders, elbows and wrists. I look at finger independence and strength. This way, I can determine what strengths can be built on with their hands. If I am teaching someone using their feet, I do the same quick assessment with their legs and feet. This assessment can be useful to address the areas of adaptive consideration that have been identified by MAPs. The creativity that can flow once a teacher understands the capability of their adaptive pupil's unique anatomy is truly amazing!

Connection to instrument

The connection to the instrument evaluates what part of the pupil is going to connect to the instrument to play it and how it will connect. Because pupils may play with fingers, toes or residual limbs, offering multiple options lets beginners explore and discover over several days or weeks the method that best suits their own way of making music. This point of connection determines how they will experience making music. Early in the work at CAMC, specialized prosthetics appeared to offer an easy solution, but many pupils prefer the direct sensory experience of touching the instrument and feeling the music resonate through their body. The sense of the instrument as an extension of the musician can be lost with prosthetics but preserved when the body connects to the instrument in more natural ways, such as using a bow grip instead of a prosthetic arm. Exploring multiple ways of connecting enables pupils to discover the approach that best suits their needs.

Changes to the instrument

Musical instruments are surprisingly versatile. Changing the way the instrument is played prompts consideration for changes that need to be made to the instrument itself. Changes can be as simple as switching out typically sized instruments for smaller ones, such as using a ¾ sized cello instead of a full-sized. Switching to an instrument in the same family can be effective as well. For instance, a cornet is a more compact instrument than the trumpet and can better accommodate smaller and unique hand anatomy.

Some instruments can be alternatively strung or tuned. For instance, with one pupil, range of motion required that her cello be restrung in the opposite direction in order for her to reach the strings on which teaching would typically begin. Although the adaptation was considerable, it enabled the pupil to access the easier strings, make music, and develop the muscle control required to progress, allowing her to transition to a traditionally strung cello. By employing alternate tunings, such as open G, guitarists can simplify chord positions. One pupil with multiple limb differences was able to play with the instrument secured in a stand, chording with her left hand and strumming with her right foot. Making decisions like whether or not to restring or change the tuning of an instrument feels more like an art than a science, but it can make a difference in their ability to play.

Configuration of the keys of a woodwind allows for little variation in how to play the instrument and adding specialized devices is not consistently effective. However, the field of adaptive woodwinds has made significant progress in the past year with the invention of both the one-handed clarinet, fully chromatic from low E to high F, and the 3-D-printed one-handed recorder (Worrell, 2025). Other examples exist, such as Jeff Stelling's Bundy Prototype Toggle-Key saxophone invented in 2001 and featured as part of the UNK One-Handed Woodwinds Program at the University of Nebraska Kearney, USA (2025).

Positioning of the instrument and pupil

Once a connection between the pupil and the instrument has begun to take shape, attention can then turn to how the instrument must be positioned to invite fuller access. How does the

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instrument sit in front of the musician? Both angle and height may need to be addressed. Some instruments require a radical change in positioning, such as cellists who play with the cello lying horizontally in front of them rather than vertically against their body. Others might require a slight angle difference, such as adjusting the position of a French horn to accommodate a shorter residual limb.

When the instrument is large and not easily moved, it also works to consider the position of the musician in relation to the instrument. For instance, a left-handed pianist may situate themselves between C4 (middle C) and C5, rather than the typical position of being situated at C4. A pupil playing with their feet will likely sit higher than the keyboard for optimal leg positioning.

Specialized seating

For some pupils, the position of the instrument and musician has been altered enough that it is necessary to modify traditional seating. Some adaptive cellists have found bar stools with backs work well to play cello with their feet. In one instance, a cellist found the best support and positioning came from an ergonomic desk chair. A drum stool may work well to provide extra stability and support for a pianist who plays with their feet, while some foot-playing pianists have found it best to sit on the floor and play an electric piano. In some instances, seating has been created or modified from store-bought models, in order to assure proper support and stability for the pupil musician.

Specialized instrument stand

Because pupils may not be able to support the weight of their instrument, or the position of their instrument is so unique that they may not be able to hold it, the creation of a stand may be necessary. There is no universally designed instrument stand; the design of a stand will always depend upon the pupil's need and the instrument they have chosen to study. The material of the instrument, whether wood or metal, shapes its natural acoustics, and the choice of stand can either enhance or diminish those qualities. While stability is necessary, it is also important to consider how to protect the instrument from damage, and minimal contact between the stand and instrument is optimal. In some instances, a stand for another instrument can be repurposed for an adaptive pupil. For example, for the guitar player mentioned above, a string bass stand was used to hold the guitar while she played chords with her left hand and strummed with her right foot.

Specialized devices

Rather than requiring a stand to hold the instrument, some adaptive pupils need smaller, more intricate bespoke devices. These devices tend to replace mechanisms typically controlled by the hand, such as bows, picks, and mutes. While they are often 3D-printed, these devices can also be as simple as a guitar pick glued to a drink bottle safety ring or as complex as pedal extension attached to a piano so the pupil can pedal with their shoulder.

Pedagogical considerations

Some pupils require no pedagogical considerations after the adaptation of the instrument is complete. For instance, once given a one-handed clarinet, a pupil will simply need access to the appropriate fingering chart, like any beginner pupil. However, some will require ongoing adaptations to pedagogy. An example of that would be piano, which, due to the nature of written piano music and the differences in positioning of the hand on the keyboard, may require a modified course of study, as well as ongoing teaching on creating adaptive fingerings and redistribution of chords.

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Traditional and adaptive technique development

The MAP analysis highlighted that, in practice, techniques for adaptive pupils tend to fall into two groups: those that can be taught effectively through traditional methods and those that require more flexible, adaptive approaches to meet pupils' needs. Much of this will depend upon the adaptive differences in how the pupil plays. For instance, if range of motion is an issue, the motion created for vibrato on a string might be different, while the motion used to press the string for a pitch may be the same. Certain skills may need to be mastered earlier in the pupil's study than they typically would, such as a one-handed pianist moving around the keyboard earlier than typical in their studies or introducing pedalling earlier to smooth out transitions.

Planning for future considerations

Early on, I realized that not all technique related issues can be solved at the beginning. Playing a musical instrument is a physical activity, and just as with typical music pupils, muscle and skills develop as they play. Because of this, techniques that may seem out of reach, such as certain bow techniques, muting on a brass instrument, pedalling the piano, or creating vibrato, may present solutions after development of other skills. While the priority is to solve the technical and adaptive issues that are necessary for that stage of playing, a teacher might also consider what will be needed to progress to the next stage. Not only does ongoing consideration give rise to possible solutions but also it provides opportunities to break down that technical task into component parts and teach exercises to prepare the pupil as they approach the time to learn the technique. For instance, the adaptive cellist with the reversed strings ultimately needed to be able to play all the strings with equal ability. Approaching her second full year of study, her teacher began giving her scales and other exercises on the furthest strings, slowly stretching her range of motion. By the beginning of her third year of study, she was able to reach all areas with equal quality and transferred her skill to a traditionally strung cello.

Conclusion

Witnessing the creativity and ingenuity of adaptive pedagogy has been an unexpected gift to my career as both a music and special educator, synthesizing the physical, acoustical, mechanical and human aspects of creating music. By embracing adaptive music pedagogy, educators have the opportunity to broaden their professional practice and extend the joy of music-making to people who have historically been excluded. In this way, teachers expand both their impact and their career, shaping a more inclusive and transformative future for music education.

Supplementary material

The supplementary material for this article can be found at https://doi.org/10.1017/S0265051726100813.

Competing interests

The author declares none.

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