Bridging the “What” to the “How:” Adaptive Strategies for Music-Making

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Session Objectives:

01 **Provide a general overview of accessible music instruments and the associated technologies.**

02 **Provide suggestions on best practices to incorporate all students to make music.**

03 **Provide session attendees with resources for further assistance.**

Why does this matter?

Every child deserves a fair and equitable opportunity to participate in music making!

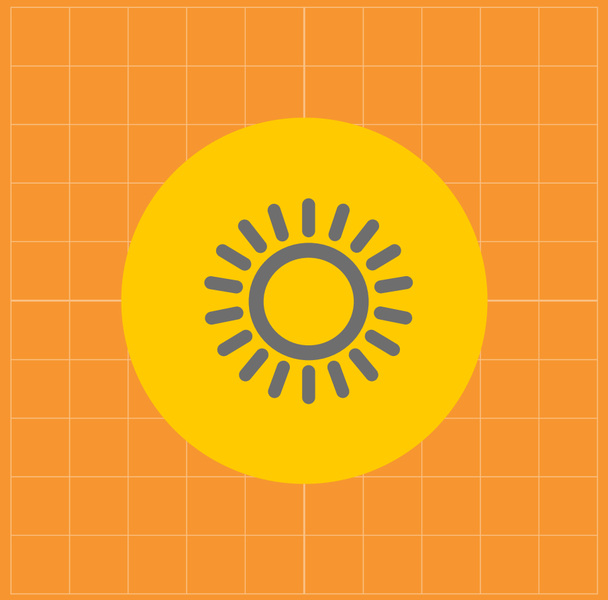
It’s the law!

The passing of the Individuals with Disabilities in Education Act guarantees a student with disabilities: a free and appropriate education (FAPE), an individualized placement program (IEP), placement in the least restrictive environment (LRE), and parent/teacher participation.

Bridging the “what” to the “how:” Adaptive Strategies for Music Making

Part 1: Introduction

BASIC TERMINOLOGIES AND CONCEPTS TO KNOW!



Modification

A modification is a change in **WHAT** the student is taught or expected to learn and alters the curriculum.

Accommodation

An accommodation is a change in **HOW** the student will learn the same material as their peers and alters the environment.

Curricular Framework: Universal Design for Learning (UDL)

"Universal Design for Learning (UDL) is not just a framework for curriculum design. It is the expression of a belief that all students are capable of learning and that instruction, when crafted and implemented with this belief in mind, can help all students succeed in inclusive and equitable learning environments."

(Novak, 2022)

Universal Design for Learning (UDL)

Multiple Means of Engagement:

- Prvide options for capturing interest and motivating learners.
- Offer Choices and autonomy to optimize relevance and authenticity

Multiple Means of Representation:

- Present infomration and content in different ways (e.g., visual, auditory, tactile)
- Provide options for comprehension and perception

Multiple Means of Action and Expression:

- Offer learners various ways to navigae learning environments and express what they know
- Provide options for executive functions and communication

What is an Accessible Music Instrument (AMI)?

An Accessible Music Instrument (AMI) is a musical instrument that has been designed or adapted to be played by individuals with physical, sensory, or cognitive disabilities. These instruments often incorporate features such as simplified controls, ergonomic designs, and alternative input methods to accomodate the specific needs and abilities of the user.

(Larsen et al., 2016)

Accessible Muisic Instruments (AMI) can be classified into three main categories:

Adapted Instruments:

Instruments that are modified versions of existing instruments.

Augmented Instruments:

Instruments which use technology to enhance the functionality of an instrument.

Novel Instruments:

Instruments which are newly designed instruments that do not resemble traditional instruments.

Acronyms and Terminologies:

- **AMI:** Accessible Music Instrument
- **ADMI**: Accessible Digital Musical Instrument
- **AI**: Artificial Intelligence
- **DAW**: Digital Audio Workstation
- **DMI**: Digital Musical Instrument
- **GUI**: Graphical User Interface
- **HCI**: Human Computer Interaction
- **MIDI**: Musical Instrument Digital Interface
- **ML**: Machine Learning
- **MPE**: MIDI Polyphonic Expression
- **NIME**: International Conference on New Interface for Musical Expression

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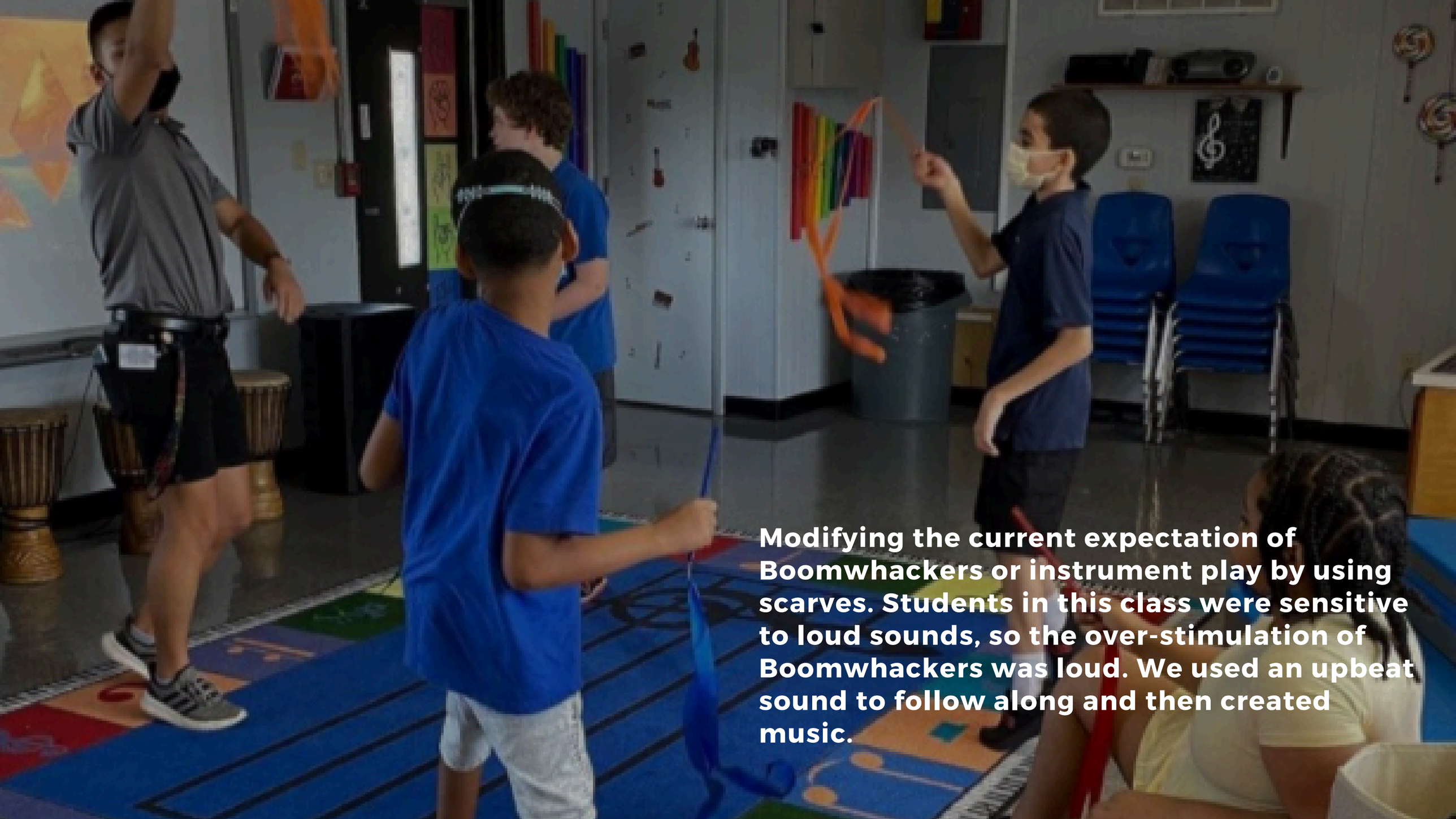
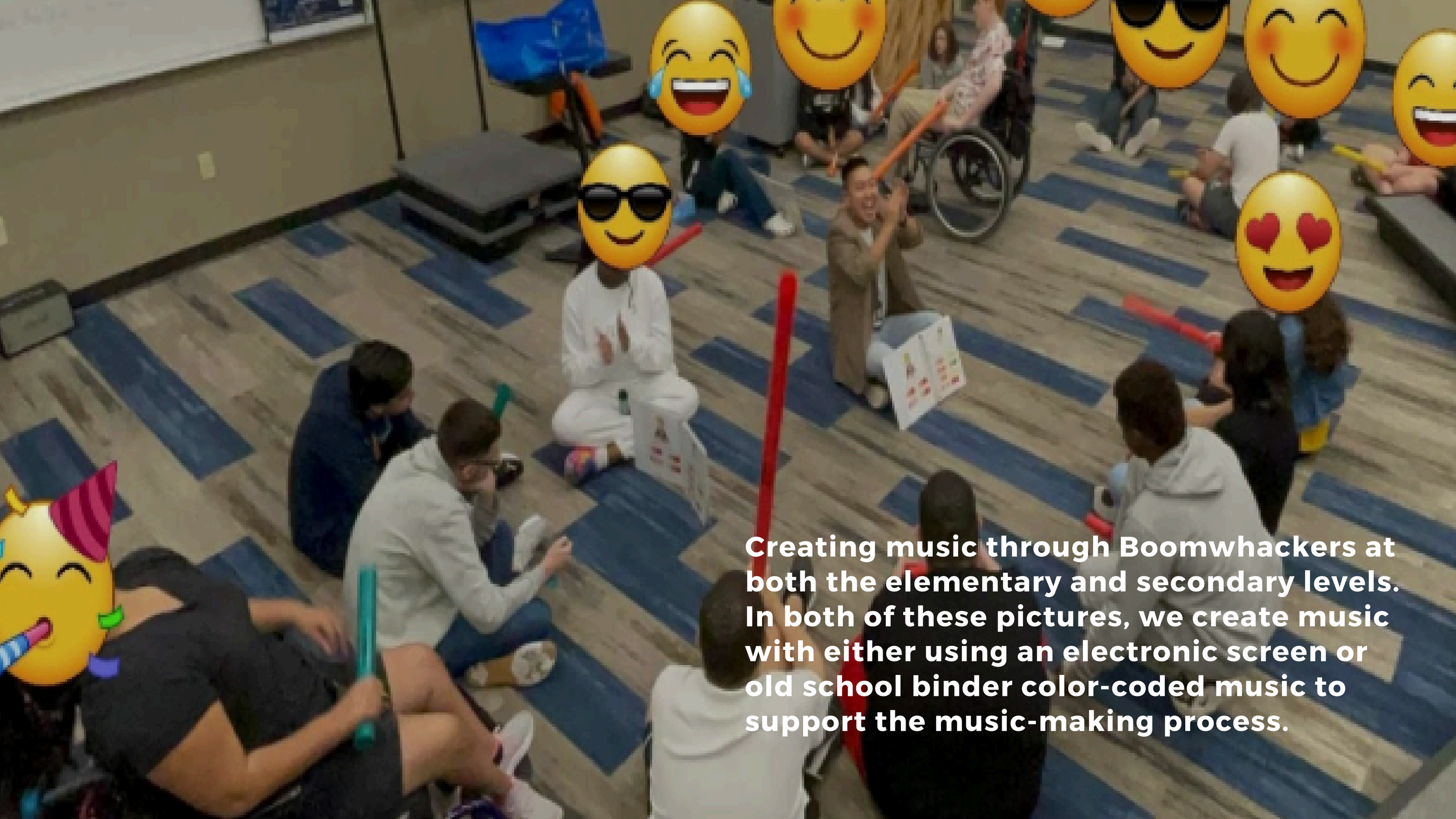
Part 2: Some “How-to’s”

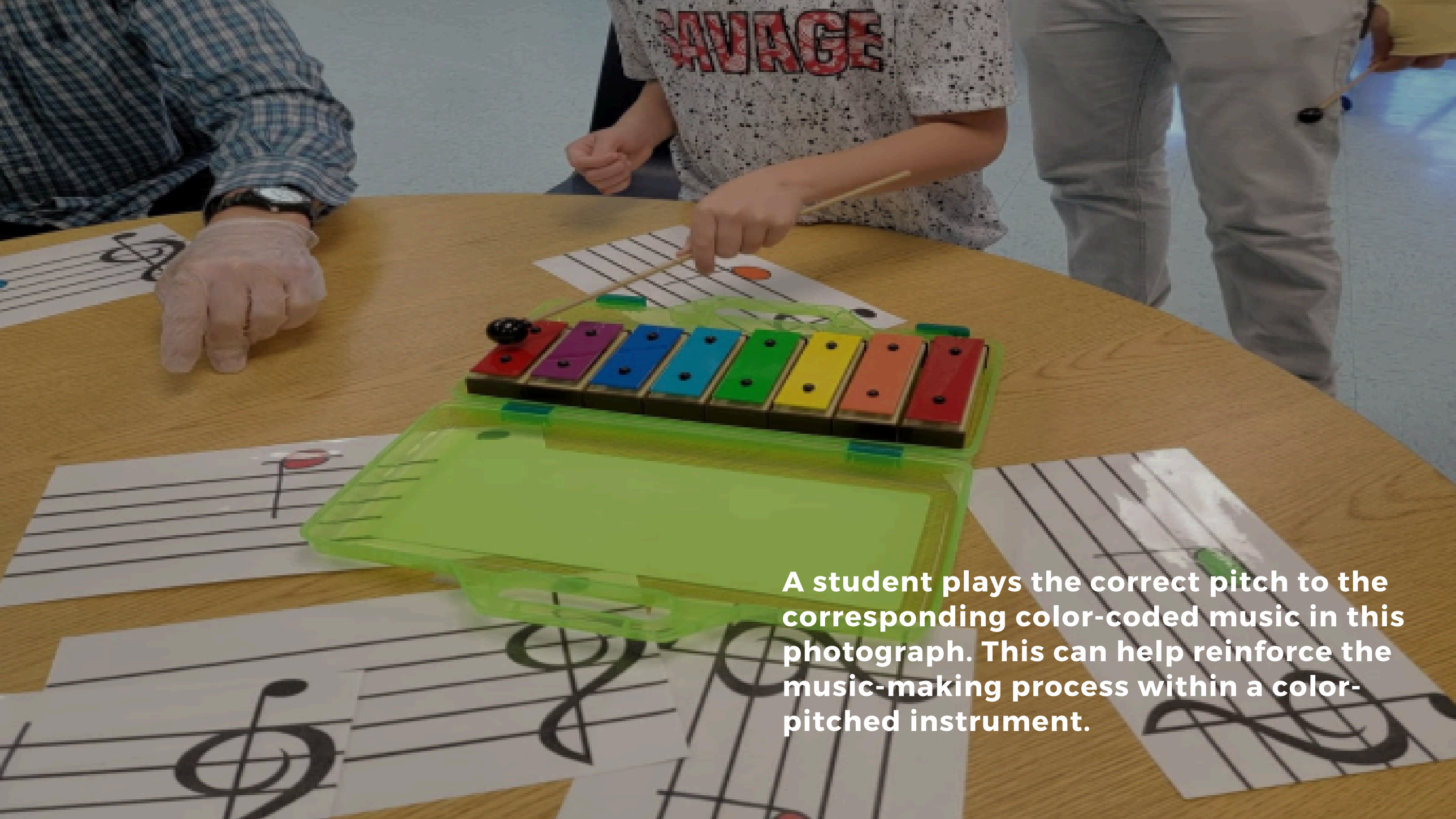
IDEAS AND SUGGESTIONS FOR APPLICATION



Modifying the current expectation of Boomwhackers or instrument play by using scarves. Students in this class were sensitive to loud sounds, so the over-stimulation of Boomwhackers was loud. We used an upbeat sound to follow along and then created music.



Creating music through Boomwhackers at both the elementary and secondary levels. In both of these pictures, we create music with either using an electronic screen or old school binder color-coded music to support the music-making process.



A student plays the correct pitch to the corresponding color-coded music in this photograph. This can help reinforce the music-making process within a color-pitched instrument.

“Reading is fundamental in elementary school. I am working towards my reading endorsement to enhance my skillset to foster and facilitate additional connections with music proficiency and reading literacy for my students. Thus far, my classes have included doing musical worksheets where we use all the aspects of reading in a music class (writing, reading, spelling, speaking, and comprehension skills).”

Adaptations in the secondary setting:

Pearl Malletstation

The use of the Malletstation provided a student an opportunity to perform as a memeber of the Marching Band.

Fliphead Alternative Headjoint

The headjoint has been adapted to play “like a recorder” to allow for ease of playing and ergonomic playing.

Flute Holder Pro

This assitive aid was designed to help students achieve the ideal flute embouchure as well as optimal playing posture

Tonal Energy

Tonal Energy is a comprehensive music education app primarily used by musicians, music educators, and students. It functions as a sophisticated tuner and metronome, but offers many additional features.

Key features include:

- A highly accurate chromatic tuner with multiple visualization modes
- Analysis tools showing pitch and tone quality
- A programmable metronome with subdivisions and polyrhythms
- Recording capabilities with playback and analysis
- Built-in reference pitch generator and tone exercises
- Sheet music tools and exercises for rhythm training
- The ability to save custom presets for different instruments

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Part 3: Equipment and Resources

TOOLS TO HELP YOU CONNECT THE “WHAT” TO “HOW”

Resources for ALL!

(UDL Perspective)

Color coding music notation:

This practice is very common with general music classrooms. This can be appliced to all musical settings to facilitate notation reading.

Use VISUAL tools were possible:

Example: “Showing” the ensemble intonation by using tuner apps such as Tonal Energy. This will illustrate the ensemble sound while providing feedback at the same time!

Adding captioning to your lessons:

Addition “captioning” to presentation and other media sources has become a widely used “tool” for everyday interaction.

Utilize tools at your disposal:

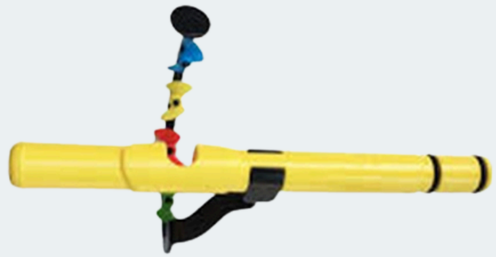
There are many apps, programs, and features on smart phones and other devices that can assist with the communication needs. Do not feel embarrassed to use such devices to get your point across!

Useful Teaching Aids and Resources

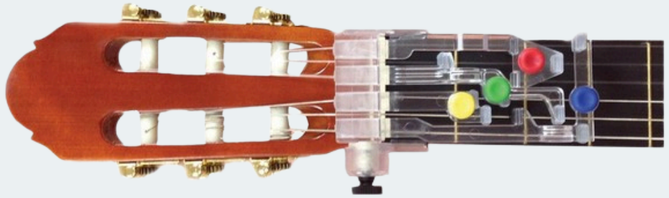
These resrouces are just a partial list of what is currently available:

Tonal Energy
(iOS, Android, Windows, MacOS)

Soundbrenner Pulse



Pneumo Pro Wind Director



Chord Buddy

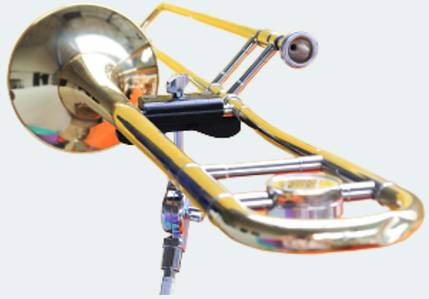
Flute Blow Aid

Things4Strings Bow Hold Buddy

Useful Teaching Aids and Resources

These resrouces are just a partial list of what is currently available:

Rath Trombone Hand Support



Monty - Trombone Mount

MERU Trompet/Cornet Holder

Hearview Subtitle Glasses

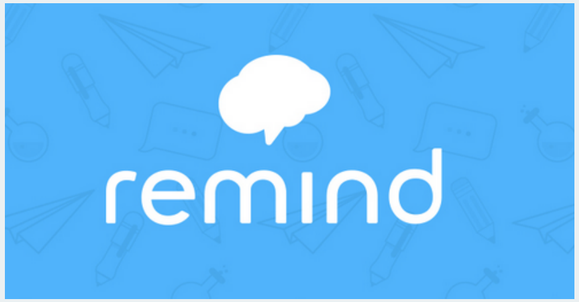
Xander Glasses

Useful Teaching Aids and Resources

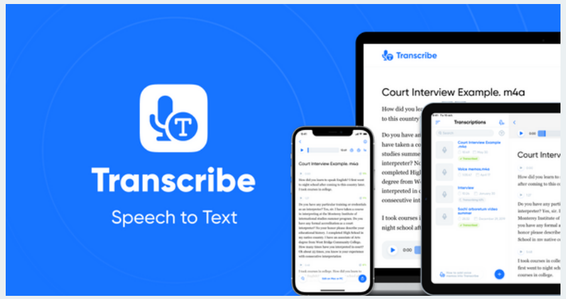
These resrouces are just a partial list of what is currently available:

Spirometer Lung Trainer

HandTalk App
(iOS/Android)

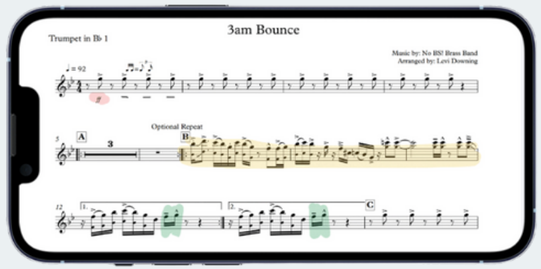


Remind App (iOS/Android)



iTranscribe (iOS/Android)

Speechify
(iOS/Android/MacOS/
Windoes



Ultimate Drillbook: Beam

Adapted Instruments:

Insruments that are modified versions of existing instruments

Nuvo Instruments
(e.g. jSax, Student Flute)

pBone

Adapted Soprano Recorder
(e.g. Aulos A204AF

Boomwhackers
(Found in various
configurations)

Resonator Bells

Adapted Clarinet: Plateau
Key Clarinet

Adapted Instruments:

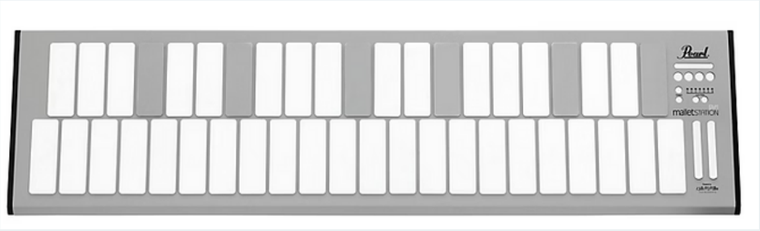
Insruments that are modified versions of existing instruments

pTrumpet

ARTinoise Re.corder

Fliphead AM-1 Alternative Flute Headjoint

Odisei Music Travel Sax 2



Pearl malletSTATION

Violin/Viola/Cello Size Adaptations

Adapted Instruments:

Insruments that are modified versions of existing instruments

Jupiter Flute 700W

Dolmetsch Gold
Adapted Recorder

One Handed Saxophone
David Nabb, Professor
University of Nebraska Kearney

LiberLive C1 - Smart Guitar

Aeroband Guitar

Possibilities are ENDLESS!

MIDI Controllers

MIDI controllers are devices that send MIDI (Musical Instrument Digital Interface) data to control various parameters in electronic music production. They come in different forms and sizes, each designed for specific purposes. Here are some common examples of MIDI controllers:

MIDI Control Surface
(e.g. Roland GK-3)

MIDI Drum Controller
(e.g. Yamaha DT-X)

MIDI Pad Controller
(e.g. Abelton Push)

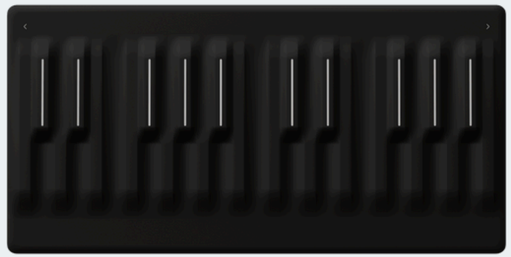
MIDI Guitar Controller
(e.g. Roland GK-3)

MIDI Wind Controller
(e.g. Akai EWI)

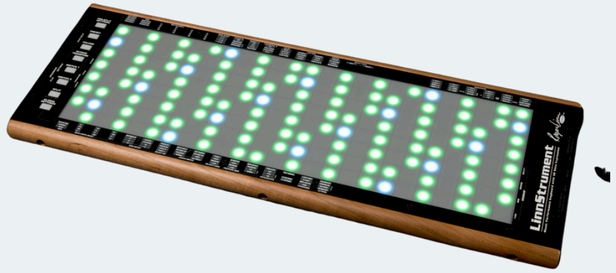
MIDI Keyboard Controller
(e.g. Akai MPK mini)

MIDI Polyphonic Expression (MPE) Devices

MIDI Polyphonic Expression is an extension of the standard MIDI protocol that eneables much more expressive control over individual notes.



Roli Seaborad M



Roger Linn Design Linnstrument

Artiphon Orba 3

Some of the MPE features allow for:

- **Pitch bend (vertical movement)**
- **Channel pressure/aftertouch (pressure sensitivity)**
- **CC74 for timbral control (horizontal movement)**
- **Note velocity (initial strike)**
- **Release velocity (how you end the note)**

Augmented Instruments

Using technology to enhandce the instrument.

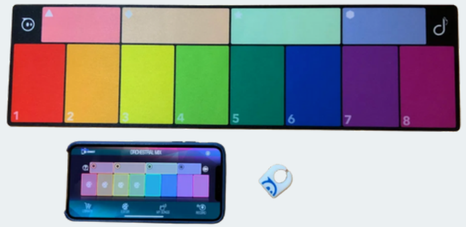
- Some of the more “traditional” methods of augmenting an instrument can include: effects pedals switches, attachable sensors for feedback/control, etc.

- More advanced technologies are allowing for a fuller range of musical interaction through use of movement through space, wearable tech, and body movement/motion tracking.

Top Image: Roli Seaboard M with Airwave. Bottom Image:(Left) Mimu Gloves, (Right) EyeHarp

AMI - Novel Instruments

These are some examples of newly designed instruments to accommodate various music performance styles and approaches:



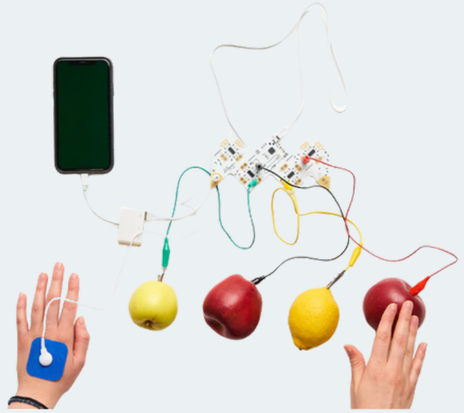
Sphero Specdrums

ODD. Ball

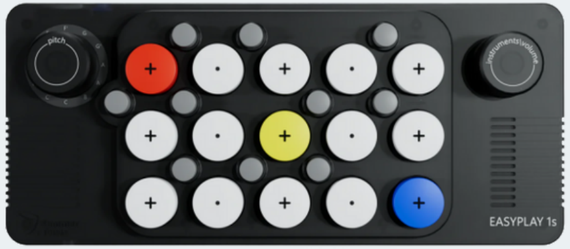
Funki Musical Instruments

Music Fingers

Playtronica Touch ME



Playtronica Playtron



Cubyfun Easy Play 1s

DMI - Novel Software

Vocleah Music - Dubler 2 is an example of what is referred to as a MIDI Capture software that inports MIDI signals from your DAW software of choice.

Dubler 2

Digital Audio Workstations (DAW)

A DAW or Digital Audio Workstation, is a sofware program that allows users to record, edit, and produce audio on a computer.

Some of the most popular DAW programs include:

- **Reaper**
- **ProTools**
- **Cubase**
- **Logic Pro**
- **FL Studio**
- **Studio One**
- **Sonar**
- **Reason**
- **Garage Band**
- **Ableton Live**

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Part 4: Bridging it all together

THINGS TO CONSIDER AND FINAL THOUGHTS

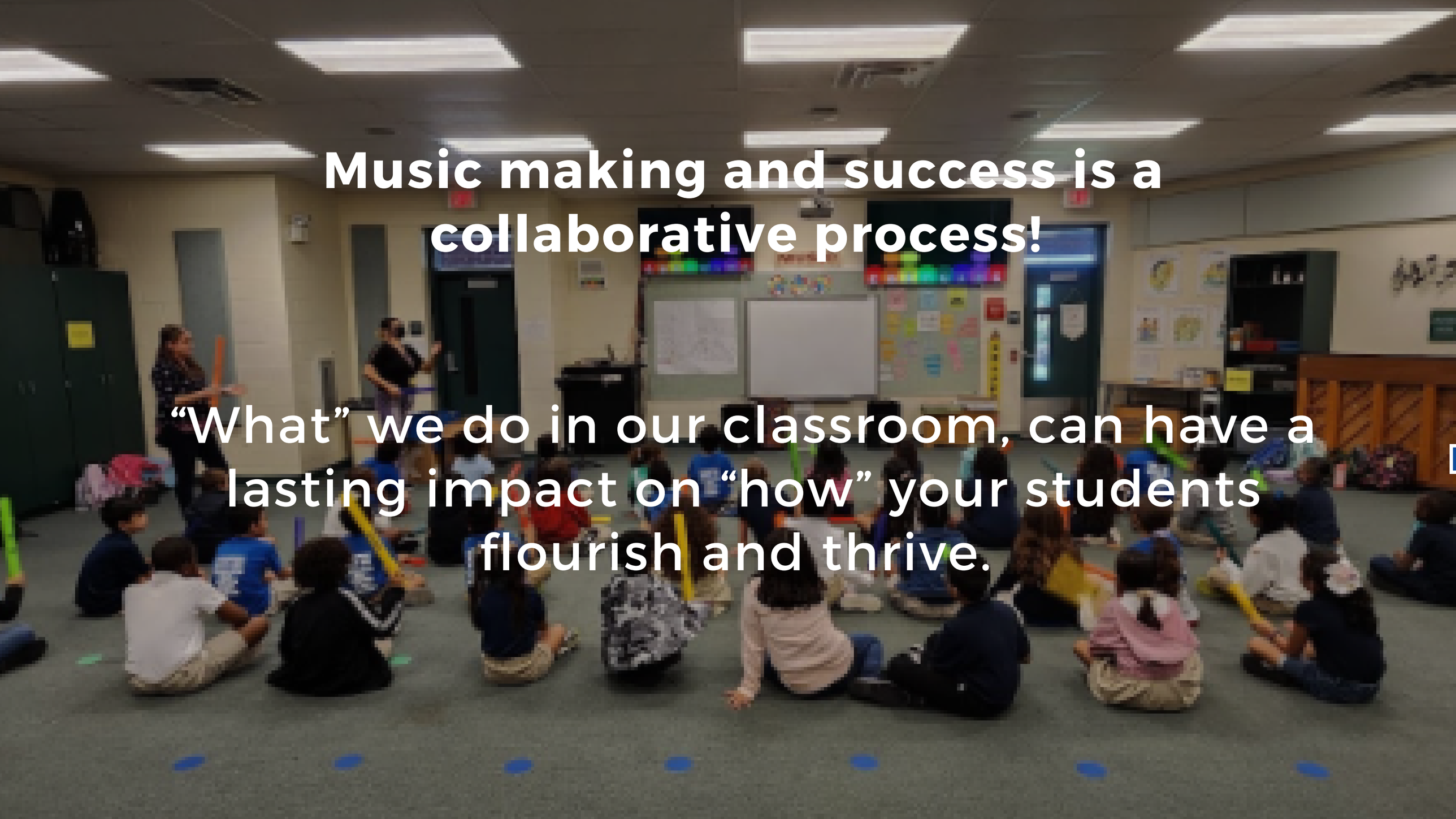
Things to consider:

- AMIs are as “unique” as your musicians. Different resources can accomodate different musical needs.
- AMIs are constantly evolving as new software and technologies are developed. Be open to “expansive” possibilities to music making!
- The available resources can be used across the board with ALL students (UDL).

How can I help my students?

Due to the “bespoke” nature of AMIs, they can be a financial barrier for some programs. Please consider these options:

- **Attend the IEP meeting for your student and suggest the inclusion of needed resources for your student in this document. (Note: school districts must provide the tools/resources for the student if documented on the IEP.)**
- **Seek out community agencies/organization for additional support and resources.**
- **If there is a need that is not being addressed, consider collaborating with a colleague with the expertise to create that new device and/or modification!**



Music making and success is a collaborative process!

"What" we do in our classroom, can have a lasting impact on "how" your students flourish and thrive.

Got Questions?

Please feel free to reach out. We are here to support YOU!

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Thank you!

We would like to thank the Florida Music Educators Association for the opportunity to share our session today.

We would also like to thank Dr. Alice-Ann Darrow for serving as our session coordinator!

Florida Music Education Association

Scan Me!

Scan QR Code below for session attendance and feedback!

References

FPLEASE SEE SOURCES BELOW FOR ADDITIONAL INFORMATION!

Larsen, J. V., Overholt, D., and Moeslund, T. B. (2016). “The prospects of musical instruments for people with physical disabilities,” in NIME, Vol. 16 (Brisbane, QLD), 327–331.

Novak, K. (2022). UDL now!: A teacher’s guide to applying universal design for learning (3rd ed.). CAST Professional Publishing.

Appendix

Accessible Instruments

(Click on link for more info)

Ableton Move Controller
AeroBand Guitar
AeroBand Pocket Drums 2 Max
Akai-MPK Mini
Artinoise Re.corder
Artiphone - Chorda
Artiphone - Orba
Aulos A204AF Soprano Recorder
Dolmetsch Single Hand Recorder
EyeHarp
Funki Instruments
Liber Live C1: Stringless Guitar
LinnStrument 128
Mimu Gloves
Music Fingers
Novation Launch Pad
Nuvo Instruments
ODD. Ball
Odisei Music Travel Sax 2
pBone
Pearl Malletstation EM1
Playtronica - Playtron
Playtronica - TouchME
pTrumpet

Appendix

Accessible Instruments (cont.)

Roli - Airwave
Roli - Piano M
Roli - Seaboard 2
Roli - Seaboard M
Skoog (Discontinued, but can be found on eBay)
Specdrums (Discontinued, but can be found on eBay)
Jupiter Flute 700W

Assistive Technology

Hearview Subtitle Glasses
Soundbrenner Pulse
Soundbrenner Core 2
Xander Glass

Instrument Aides

Things4Strings Bow Hold Buddy
Chord Buddy
Flute: Flute Holder Pro
Flute: Pneumo Pro
Flute: Flute Player Mouth Blow Aide
Flute: Flipped Alternative Headjoint AM-1
MERU Trumpet/Cornet Holder
Monty Trombone Mount (Music Stand)
Rath Trombone Hand Support

Appendix

Software/App Resources

Blob Opera
Bloom App
Dubler 2 - Midi Voice Capture
Grove Pad
Smule Magic Piano
Sound Forest App
Tonal Energy

Digital Audio Workstation (DAW)

Ableton Live
Adobe Audition
Audacity
Cakewalk
Cubase
Dubler 2 - Voice MIDI Capture/DAW
FL Studio
Garage Band
Logic Pro
ProTools
Reaper
Reason
Sonar
Studio ONE

THE END