

## **Facilitating Differentiated Instruction with Technology**

by Dr. James Frankel

Over the past few years my district has committed quite a large portion of its staff development budget to differentiated instruction. As with many professional development days, my fellow music teachers and I often feel as though the workshops are targeted to the classroom teachers and we feel a little left out. Much of the information presented is very interesting and I believe highly pedagogically viable but I was always trying to think of specific ways to incorporate the concepts into my own teaching.

During one of those many workshops it dawned on me that music technology is the perfect tool for music educators to address differentiating instruction, in all of the different possible settings of a typical music department. The following is an attempt to give a brief overview of the rationale behind differentiated instruction, traditional methods that we have been using for many years that can be enhanced with technology to address this style of instruction, and technology resources (both hardware and software) that can facilitate differentiated instruction.

### **What is Differentiated Instruction?**

- In the simplest terms, differentiated instruction is when a teacher delivers the content of a lesson in a way that addresses the different learning styles of the students. The traditional lecture format, even when enhanced by audio and visual aids, addresses only the audio/visual type of learner. Students whose learning style differs from the audio/visual learning style are often frustrated in a traditional lecture, but would thrive in a setting where cooperative group projects are often assigned. The students in our classes today live in a much different world than we grew up in, with media streaming into their heads 24/7.

Recent brain research shows that each brain favors one hemisphere over the other. This *hemisphericity* explains much of our personality, and our learning style. Those who favor their left hemisphere tend to be more analytical, logical, sequential and linear. Right brained people tend to be the opposite, creative, spontaneous, good improvisers and approach problems in a more rounded fashion. While everyone has qualities from both hemispheres, very few find themselves balanced perfectly between the two. This *hemisphericity* has a great deal to do with what learning style you are.

Gardner's Theory of Multiple Intelligences coupled the work of Beatrice McCarthy and her 4MAT system of creating differentiating instruction is the model that many districts are using to train their teachers. The 4MAT system uses a wheel diagram so that teachers can consciously plan their lessons around the different learning styles. Any lesson can be creatively adapted so that every learning style is addressed.

I was recently 4MATted by my district and found the training really interesting and worthwhile. Most of the teachers in the training with me expressed that they already differentiated their instruction naturally, they just never thought about it in this way before. Any teacher who has been around for a while knows that each of their students has a different way of learning and they adjust for it. With formal training in differentiated instruction, teachers can enhance their instruction and ensure that every one of the students in their class is given an opportunity to learn.

## **Differentiated Instruction in the Music Classroom: The Role of Technology**

- While I was being trained it occurred to me how technology is the perfect tool for differentiating instruction in our music classrooms.

### **Performance-based Classrooms**

- In the band, orchestra, and chorus classroom differentiating instruction has always been necessary, but often difficult. We are all familiar with the student who is either way behind or way ahead of the rest of the group. When teaching a small group lesson a student like this is frequently sent into a practice room to either catch up, or work on more challenging literature. Also, peer-coaching techniques can work very well when you utilize the advanced student to teach the struggling one.

In addition to the techniques we have been using in the past, technology can be a perfect tool to enhance differentiated instruction in a performance-based classroom. There are a number of classroom environments for incorporating technology into instruction. In a *No-Computer Classroom* teachers assign homework online using some wonderful resources which will be discussed later, or bring the students to the school computer lab to utilize music software. In a *One-Computer Classroom* teachers can load specific software titles and put the computer in an office where students can use it for reinforcement. In what I call a *Bits & Pieces Classroom* teachers can use older computers and MIDI keyboards to run software titles for the students, and in a *Music Technology Lab* like the one I teach in, the sky is really the limit in terms of ways that technology can be utilized to differentiate instruction. With these environments in mind, the following strategies have worked well in my classroom.

#### **1. Use Music Theory Software to Drill Music Fundamentals**

At the middle school level where I teach, I am often confronted with students who are just starting an instrument in a lesson group filled with students who have been playing for 2 or 3 years. In a situation like this, I often find that the student cannot read music. Because it is not feasible for me to take time from the lesson to teach these fundamental skills, I often employ music theory software titles (either on one computer in my office or in my lab) with specific exercises that are geared to music fundamentals. CAI (computer-assisted instruction) titles such as *MusicAce* (Hybrid) and *Alfred's Essentials of Music Theory* (Hybrid), give students wonderful opportunities for both comprehensive instruction and drill and practice exercises with varying levels of difficulty. Other titles such as *Practica Musica* (Hybrid) also contain many exercises with varying degrees of difficulty that drill music fundamentals without the instruction aspect. Further, one of my favorite websites, <http://www.musictheory.net/>, contains wonderful *free ≥trainers≤* that students can utilize on computers in a school computer lab, a local library, or at home. These trainers range from note naming and key signature trainers to a wonderful brass-fingering trainer that is a great tool for any beginning brass player.

It should be noted that each of the resources mentioned utilizes many of the Multiple Intelligence and 4MAT concepts by presenting the information and exercises in a

variety of formats, including audio and visual information as well. Whether it was intentional or not, the creators of music education software address differentiated instruction by including opportunities for students to learn through a variety of pedagogical methods.

## **2. Monitor Student Practice**

*SmartMusic* (Hybrid) is one of the best examples of how technology can differentiate instruction, even outside of the classroom. For those of you unfamiliar with *SmartMusic*, it is software package geared toward instrumental music students that allows students to perform assigned exercises and repertoire with a computer-generated accompaniment (similar to the *Music Minus One* series) and record their performance for assessment by their music director at a later time. This software can be loaded on a student's computer at home where they can submit their performances directly to their music director over the Internet.

In order to differentiate instruction, a teacher simply needs to assign each student a long term goal (perhaps over the course of a marking period) allowing the student ample to time to reach that goal, thereby learning at their own pace. The teacher can tailor this goal for each student. Once those goals have been established, the director waits for the performances to be submitted, and the assessment is already done by the software!

One additional resource for practice at home is a wonderful website created by Scott Watson called *Home Practice Online* (<http://astro.temple.edu/~swatson/>). It is a great example of how a band director can make maximum use of the Internet to help encourage practicing at home. The website contains accompaniment files for many of the compositions that the students are performing for the concert as well as exercises that are used during the lessons. Students use the MIDI files contained on the site to accompany their practice sessions. It is the perfect tool to help encourage those students who really need it to practice.

## **3. Aural Skills Assessment for the Choral Music Classroom**

*Auralia* (Hybrid) is a comprehensive aural skills software program from *Sibelius*. There are a number of very good exercises that can easily be used with vocal music students (or instrumental music students). While there are no real sight-singing examples for the students to complete, there are exercises that assess interval singing, interval recognition, scale singing, counterpoint singing, and more. Teachers can create assessments for their choral groups with varying levels of difficulty. For example, you can create a Soprano IA assessment for the more advanced students and a Soprano IB assessment for those who are struggling. During a choral rehearsal students could be dismissed one at a time to complete the assessments. This would cause minimal disruption to the rehearsal while assessing each student.

For home practice *SmartMusic* can be used, although it cannot assess singing yet. It is rumored that the next update for *SmartMusic* will have that ability which would make it an invaluable resource for every performance classroom. I suggest using web resources such as <http://www.musictheory.net/> that has three aural skills trainers (interval ear trainer, scale ear trainer, and chord ear trainer) that can enhance classroom instruction.

## General Music Classrooms

The general music classroom is where technology can make a very positive impact on differentiated instruction. Because teachers in this setting are often dealing with the entire student body (many of whom are not in the instrumental or vocal music program) there are many different learning styles that need to be addressed. Classroom management can be difficult in the general music setting, but when a teacher varies their method of instruction it can help keep all students interested in the lesson, and on task.

### **1. Utilize *PowerPoint* or *Keynote* to enhance the traditional lecture format.**

To address the audio/visual learner, teachers can use technologies such as *PowerPoint* (Hybrid) and *Keynote* (Mac only) to make a traditional lecture much more interesting for the students. In my own teaching I have created *PowerPoint* presentations for all of my lectures and have found that my general music students consistently pay attention, and somewhat surprisingly, appreciate the time and effort that went into creating the presentation. Include lots of visual images and audio files, as well as web links, to make the subject matter come to life. You can also post *PowerPoint* and *Keynote* presentations on a music department website to address the special needs of students who may need help with their note-taking skills. I allow my students to access my presentations at home so that they can spend more time paying attention during the presentation, rather than worrying about taking accurate notes. Please visit my website at: [www.jamesfrankel.com/powerpoints.html](http://www.jamesfrankel.com/powerpoints.html) to view and download some of these presentations.

### **2. Create cooperative group projects with clearly delineated roles to address different learning styles.**

Cooperative group projects can be a wonderful way to incorporate many different learning styles. It takes a creative teacher to come up with project ideas in which *every* student can be successful. By keeping the various intelligences and learning styles in mind when creating a cooperative group project, teachers will find that the individual roles almost create themselves. For example, one project I do with my students is called a  $\geq$ Folk Web $\leq$ . In this project the students are charged with creating a webpage about a given folk song. The students need to research the history of the song, find the lyrics, decide on a visual image that captures the essence of the song, find a MIDI file of the song, and after importing the MIDI file into a sequencer, record themselves singing the lyrics of the song. On the outside it seems like a straight-ahead lesson, but when you think about differentiated instruction, it becomes clear that almost every intelligence and learning style is covered. Students with strong musical skills might elect to sing the song. Those with strong inter- and intrapersonal skills act as the leader. Learners with strong spatial skills are in charge of the layout of the page. The visual learner chooses the image. The audio learner finds the best MIDI file. The logical/mathematical learner is in charge of finding relevant information. It goes on and on.

### 3. When giving assignments, allow for student creativity.

One of the easiest ways to incorporate differentiated instruction into your classroom is when you assign a task you allow for student creativity in terms of what the end product can be. If you give students the ability to choose the format of the end product, students will not only feel empowered, they will make effective use of the skills and intelligences they have to create a product that will often surpass teacher expectations. For example, I used to assign my students a written report about a popular 20<sup>th</sup> century musician with strict guidelines. I often found that my students often procrastinated and turned in sub-par work. When I let go of the strict parameters and allowed for the students to choose how they would present their information, I found the results much better. Instead of a typed report, I now allow my students to create websites, blogs, notated compositions, artwork, videos, loop-based compositions, etc. Assessment is left to the students. They create scoring rubrics for their projects ahead of time and scoring them becomes a very objective activity. Although I initially found it a bit scary to let go of the guidelines, it has been a very positive experience for my students and I.

#### **Resources:**

- I have based much of this article on the works of Howard Gardner and Beatrice McCarthy whose books I have listed below. In addition there are a number of fantastic resources available through the Association of Supervision and Curriculum Development (ASCD) which also has excellent information about differentiated instruction on their website: <http://www.ascd.org/>. You might also find Beatrice McCarthy's website: <http://www.aboutlearning.com/> a great resource as well.

*Differentiated Instruction Using Technology: A Guide for Middle and High School Teachers* by Amy Benjamin

*Differentiation in Practice: A Resource Guide for Differentiating Curriculum* by Carol Ann Tomlinson & Caroline Cunningham Eidson

*Multiple Intelligences: The Theory in Practice* by Howard Gardner

*About Teaching: 4MAT In The Classroom* by Bernice McCarthy

I hope that this article encourages you to try using technology to incorporate differentiated instruction in your music classroom. As always, if you have any questions or comments, please feel free to visit my website at: <http://www.jamesfrankel.com/> or email me at [jtfrankel@hotmail.com](mailto:jtfrankel@hotmail.com).