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## Grounded Tech Integration Using K–12 Music Learning Activity Types

**M**IDI, digital audio recorders, music notation software, electronic instruments, and mobile apps are but a few of the technological tools that teachers can use to support music learning. However, technologies alone don't develop students' musicianship. Engaging learning activities, purposefully selected to effect desired outcomes, are essential. To become well-rounded musicians, students need to have meaningful experiences as composers, improvisers, performers, and listeners while also developing their cognitive understanding of music. Experiences designed to align music content with well-selected learning activities and supporting technologies can assist students' meaningful music learning. How can you design these experiences?

### Using Learning Activity Types

One way to help teachers integrate technology effectively is to focus on instructional planning. Researchers tell us that teachers plan instruction primarily according to students' curriculum-based learning needs. They typically organize lessons, projects, and units around content-based learning activities. Therefore, we recommend integrating technology according to how teachers plan, rather than asking them to design instruction around the use of a particular tool (to learn more, see "Grounded Tech Integration: An Effective Approach Based on Pedagogy and Teacher Planning," *L&L*, September/October 2009, pages 22–25).

To assist teachers with technology integration, we offer comprehensive sets of learning activity types in 10 curricular areas and suggest specific

educational technologies that can best support each type of learning described. We have organized the learning activity types in subcategories, so that each content-based collection comprises an informal taxonomy.

Once teachers have determined the learning goals for a particular lesson, project, or unit, they review the activity types in the taxonomy/ies for the content area(s) being addressed, then select and combine learning activities that will best help students achieve the designated goals. Because appropriate educational technologies are recommended for each learning activity type, choosing the activities helps teachers select well-matched technologies to support the plan. We think of this as "grounded" technology integration, because it is based on content, pedagogy, and how teachers plan instruction.

### K–12 Music Activity Types

We have organized the 69 music learning activity types that we have identified to date in terms of the three artistic processes in which musicians engage: creating, performing, and responding to music. This is a well-accepted way to conceptualize musicality. Further, these musical processes organize the National Standards for Music Education, which are the basis for many state standards and local music curricula. The taxonomy reflects typical creating, performing, and responding activities and technologies for beginning- to intermediate-level music students.

Space limitations will not permit display of the entire music learning activity types taxonomy here. Readers can access it on the Activity Types

wiki ([activitytypes.wmwikis.net](http://activitytypes.wmwikis.net)). What follows are two sample music activity types aligned with relevant technologies from each of the taxonomy's three primary categories.

### Activity Types for Music Creation

The two primary creative processes in music are improvisation and composition. Improvisation is the spontaneous creation of new musical ideas. Composition usually involves revision and refinement of ideas that are often, but not always, set in notation so that others can perform them. Six improvising activity types provide foundational skills in music improvisation. Eleven composing activity types develop students' abilities to generate and refine original musical ideas. (See examples in the table called "Improvisation and Composition Activity Types.")

### Activity Types for Music Performance

Ensembles, such as bands, orchestras, and choirs, provide the most prominent forms of school-based musical performance, while progressive institutions may also include instruction in guitar, piano, and contemporary musical ensembles, such as rock bands. Musical performance involves singing and/or playing an instrument, and it often requires the ability to read musical notation. The performing music activity types align common singing, playing, and music-reading activities with corresponding educational technologies. There are nine singing activity types, nine playing instruments activity types, and seven reading and notating music activity types. (See examples in the table "Performance Activity Types.")

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### Improvisation and Composition Activity Types

Sample Improvising Activity Type	Description	Example Technologies
Improvise a tonal or rhythmic answer to a tonal/rhythmic prompt	As a beginning improvisatory activity, the teacher, a fellow student, or another source sings or plays a melodic or rhythmic pattern, and the student improvises an original response to that pattern. Technologies can provide the pattern and/or a harmonic/rhythmic accompaniment and are especially helpful for practice.	Acoustic, electronic, and/or digital instruments; audio recorder; audio recording software; SmartMusic; Band-in-a-Box; commercial audio recordings; mobile apps
Sample Composing Activity Type	Description	Example Technologies
Compose a melodic variation	Students create a variation on a given melody. They can explore alterations of musical elements (pitch, duration, timbre). The SCAMPER technique ( <a href="http://goo.gl/sYCW4">goo.gl/sYCW4</a> ) is an effective approach.	Acoustic, electronic, and/or digital instruments; music notation software; music production software; mobile apps

### Performance Activity Types

Sample Singing Activity Type	Description	Example Technologies
Sing with appropriate posture and breath support	Singing fundamentals are crucial to successful performance. Technology can be used to monitor and provide feedback on these fundamental skills. Providing digital audio and/or video models may also be beneficial.	Audio/video recorder, audio/video recordings, audio/video textbook supplements
Sample Reading, Notating Music Activity Type	Description	Example Technologies
Clap/sing with rhythm syllables, sing/play varying rhythm patterns	The use of rhythm syllables associated with a specific counting system can assist students in moving from sound to symbol when learning rhythmic notation. Technology can provide a rhythmic/harmonic accompaniment to this process, aural prompts for individual practice, and written notation of rhythm patterns.	Auto-accompaniment software; SmartMusic; audio recordings; acoustic, electronic, and/or digital instruments; mobile apps; music notation software; interactive whiteboards

### Analyzing Music Activity Types

Sample Analyzing Activity Type	Description	Example Technologies
Describe and discuss structural and expressive components of music	Students aurally and/or visually analyze music to describe and discuss how musical elements (pitch, duration, loudness, timbre, texture, form) relate to a composition's style and genre. How do composers use musical structures and functions to create expressivity and musical effect?	Audio/video recordings, audio/video sharing sites, sheet music sharing sites, word processors, discussion forums, music notation software, wikis
Sample Evaluating Activity Type	Description	Example Technologies
Provide constructive suggestions for improvement of a musical performance, improvisation, composition, or arrangement	Students demonstrate suggestions and/or provide verbal or written feedback designed to improve their own, peers', and/or group musical outcomes.	Audio/video recordings, audio/video recorders, word processors, blogs, discussion forums, wikis

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### Responding to Music Activity Types

Music educators strive to develop students' abilities to listen to, describe, analyze, and evaluate music as well as understand its historical and cultural contexts and appreciate its relationships to other disciplines, including other art forms. Rich media technologies are especially appropriate for learning activities to develop musical responsiveness. Five music activity types in this category relate to listening to and describing; five focus on analyzing; four on evaluating; three emphasize relationships among disciplines; and three focus on relationships among music, history, and culture. (See examples in the table "Analyzing Music Activity Types.")

### Example of Music Learning Activity Types

In all of his classes and rehearsals, a hypothetical middle school music teacher named Sam works to refine students' proficiency in reading music notation and to develop their abilities to play by ear. To this end, Sam frequently plugs his smartphone into the classroom's audio system to play prerecorded harmonic and rhythmic accompaniment tracks that he has stored in the phone. As these accompaniments play, students clap, chant, and play rhythm and tonal patterns presented aurally and visually via the classroom's interactive whiteboard. The teacher has also begun to use an application, iRealb ([www.irealb.com](http://www.irealb.com)) on his smartphone that creates accompaniments automatically in various musical styles and for specific songs. Some of his students have this app on their own mobile devices. The teacher also assigns specific theory exercises from [www.musictheory.net](http://www.musictheory.net) to help his students aurally identify and notate patterns.

The screenshot shows the iRealb app interface. At the top, there's a navigation bar with links: Home, Features, iOS, Mac OS X, Android, Support, Songs, and News Blog. The main heading is "It's a book" with the subtext "Create, edit, print, share and collect chord charts of your favorite songs for practicing and performing." Below this is a smartphone displaying a "Rhythm Changes" chord chart with various chords like Bb7, G7, C-7, F7, D-7, G7, C-7, F7, F-7, Bb7, Eb7, Ab7, D-7, G7, C-7, F7, D7, G7, C-7, F7, and F7. To the right of the chart are four app store logos: App Store, Mac App Store, Google play, and Amazon.com AppStore. Below the chart are six feature icons: Chord charts, Play along, Edit and create, Guitar & Piano, Teach, and Practice, each with a short description of its functionality.

The screenshot shows the musictheory.net website. The header features the Ricci Adams' musictheory.net logo and navigation links: Lessons, Exercises, Tools, Products, and Contact. Below the header, there are two featured sections: "Theory Lessons" for iPhone, iPod touch, and iPad, and "Tutorials" for iPhone, iPod touch, and iPad. A central message says "Welcome! To begin your journey into the realm of music, select a section:" followed by "Lessons" (Explore the fundamentals of music in animated lessons) and "Exercises" (Create custom exercises to improve your musical recognition).

### Invitation for Collaboration

Teaching music is complex and challenging. Although we have identified 69 music learning activity types, we expect that number to increase, along with the technologies that support them. We invite you to help expand, refine, and further develop this taxonomy. Please visit the Activity Types

wiki and share your ideas using the email link there.

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