**DIY Arduino-powered Sound Board for the Classroom**

**What the device is and what it does:** This simple Arduino-controlled project can be made very quickly with:

* 1 Crazy Circuits™ Invention Board
* 11 Maker Tape™ conductive tape lengths
* 4 ribbon wires
* 2 Crazy Circuits™ 2 pin headers
* A variety of conductive materials for touch surfaces (conductive paint, foil tape, more Maker Tape, conductive dough
* Our free, downloadable code
* MP3 modulator/player
* MP3 Audio Files of your choice

By itself, this is a device that allows a user to load and assign any MP3 audio file to any of 11 separate Arduino-Code-Controlled touch points that, when triggered, play the audio file assigned to them. Within a classroom context, this device can be effectively used as a semi-permanent station with an elastic purpose. Think of it as a “Speak and Spell” mixed with a “See and Say” that can be set and reset to serve the needs of any content that might benefit from being reviewed via connected audio/visual information.

Although simple enough to approach this build AND the electronics/programming concepts which drive it with students, the touch board is even easier to assemble solely by the classroom educator. It can be affixed to nearly any surface in a classroom setting from tables to walls. When completed, an educator may load individual audio files that play when each separate touch pad is triggered. This can be useful in a variety of ways but primarily as a fun, classroom self-quiz station. Weave it into your classroom stations rotation…use it to motivate lame but still effective drill-and-kill practice sessions.

***Potential Sound Board Quizmaster Activities***

* **In the ESL Classroom Setting:** “Sights, Sounds, Symbols: A multiple intelligence approach to strengthening language concepts”

**General Procedure:**

Students first create a picture representation of any unit’s new vocabulary words to serve as their “button” label for each of 11 pads representing 11 new vocabulary words. Afterward, they match a given picture label to a word already labeling each touch pad. Students will activate the pads they create and actively copy the pronunciation consistently to connect word to meaning and both to sound as well as their own experiences. Once vocab familiarity has been established, students can then quiz themselves consistently in reverse by removing the word labels for each touch pad, pressing the pad FIRST to hear the word and matching correct word cards to each vocabulary word.

**\*Other Ideas:**

This activity can be used as a station to facilitate independent skill practice or a way for an educator to quickly verify vocabulary proficiency for those with special accommodations made relative to writing. The same device can be used in non-ESL vocabulary scenarios as well.

* **In the Language Arts Classroom Setting:** “Retelling Remixed: Narrative Chronology Retelling with Sound and Picture”

**General Procedure:**

The sound board can be configured to serve as a tool that facilitates independent practice in story recall and understanding narrative chronology in a language arts context. Simply add audio files out of chronological order and label each position pad with a letter. Allow students to visit this as a station, listening to the audio at each touch position and placing the letter labels in correct chronological order to correctly retell the story. This basic arrangement can be used to review the chronology of a narrative that a class may be reading. It can also be used to introduce and reinforce the idea of chronology in a number of writing styles from narrative to informative. “Retelling remixed” can even be used as an assessment accommodation for those students will special needs.

**\*Other Ideas:**

Verb Conjugation/ Verb & Adverb Pairing/ Noun & Adjective Pairing

* **In The Mathematics Classroom Setting:** “Touch Tables: Audio/Visual Multiplication Table Practice”

**General Procedure:**

Tell students that each day they are working on learning their multiplication tables, the Sound Board will be assigned a digit. Simply load either spoken numeric answers OR stated multiplication problems for that single digit to each of the 11 positions on the sound board. If the educator has loaded audio ANSWERS randomly to each position, have students write the 11 possible multiplication problems associated with the digit (call this their “factor/factor” deck) on separate index cards that will serve to label each position when it is their turn. If the educator has loaded audio multiplication problems randomly to each position, have students write the 11 possible ANSWERS associated with the digit on separate index cards (call this their “product” deck) that will serve to label each position when it is their turn. Students can now work in pairs to rotate in and out of this station throughout the day and the sound board can quiz them for you. One student pressing an unlabeled position pad, hearing either the ANSWER and matching their card to the pad position. The second student can use a multiplication table to check their answers and then switch roles. As students become better and better at recalling these important mental math facts, an educator COULD go farther and (for example) assign audio statements of several multiplication problems that yield the same product. The student pairs would have to select the card (from their product stack) that serves as the product that satisfies all of the statements…or the cardS (from their factor/factor deck) that produce the product loaded to each position.

**\*Other Ideas:**

Fraction/Decimal Equivalents, Square Roots…basically any math “fact” where memorization can lead to better mental math can be drilled and killed in an INDEPENDENT and more fun way with the sound board.