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| A close up of a sign  Description automatically generated | STEM COBB:How is Sound Produced and Changed?Fourth Grade STEM Resource from Cobb County SchoolsLesson 1 |
| This week, we will be exploring the science of sound to help us figure out the best way to create musical instruments! In secondary grades, students are asked to obtain, evaluate, and communicate information about how sound is produced and changed and how sound can be used to communicate (S4P2). Students are also asked to solve real world and mathematical problems involving volume (MGSE5.MD.5), so we will take this challenge one step further and evaluate whether or not changing the volume of the instruments' body changes the sound. |
| Materials |
| Markers Paper Crayons String or Rubber Bands Home Building Materials |
| Digital Resources |
| * Book – **Noises at Night** - <https://youtu.be/yyO-Bg-pcVE>
* Online Phenomenon – **Seeing Sound** - <https://mysteryscience.com/waves/mystery-0/sound-waves-conceptual-modeling/255?code=MTIzNDk1OTA&t=student> (Link works through June 30, 2020)
* Video – **Easy Homemade Instruments** - <https://youtu.be/7nchegAjxP0>
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| Instructions |
| 1. Start by reading a book about sound. We like **Noises at Night** by Beth Raisner Glass, Susan Lubner, and Bruce Whatley. You can watch this book online <https://youtu.be/yyO-Bg-pcVE>.
2. Next give your child a little screen time to observe sound phenomenon at <https://mysteryscience.com/waves/mystery-0/sound-waves-conceptual-modeling/255?code=MTIzNDk1OTA&t=student>. This video shows how an amazing composer has matched sound to visuals to help students SEE sound!
3. Finally, let’s take what we’ve learned about sound and vibration and apply it to the construction of some home instruments!
	1. **Ask**your child, can you use materials found around your home to create a playable musical instrument with a hollow body and strings?
	2. Allow them to **brainstorm** some ideas.  Through this process, they should realize that their instrument will have a large hollow body with strings stretched across it. Encourage students to plan out instrument bodies with 2 different volumes.
	3. Next use their ideas to **create** their instruments.
	4. **Evaluate**: Estimate the volume of each type of instrument body. Check [here](https://www.youtube.com/watch?v=E8tuMaDxgJM) if you need a refresher on finding volume (disclaimer: This will open a YouTube video in another window). How does the volume of each instrument impact the sound that instrument produces?
	5. Can you **improve** your instrument?
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