

**STEM Leadership Seminar SCED 545
Practitioner Article Proposal**

Title: STEM to STEAM, what does that mean?

Outline: This article will outline the implementation of the STEM process into the performing/visual arts and how they support NGSS Standards in the Elementary classroom. Interviews will be collected from STEM, music, and classroom teachers from multiple schools in Colorado and how they have utilized crosscutting concepts to enhance the culture and academics in their buildings.

Focus Lesson: Integrating the arts into multiple science lessons on the production of sound.

Grade Level: Elementary Schools with an established STEM program in Colorado.

NGSS Standards:

- 1-PS4-1. Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated.
- 1-PS4-2. Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated.
- 1-PS4-3. Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.
- 1-PS4-4. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.

Colorado Music Standards:

- 1. Expression of Music The expression of music is the process of practice, refinement, and performance of acquired musical knowledge and skills to communicate a range of thoughts and emotion

Colorado Visual Arts Standards:

- 2. Envision and Critique to Reflect- Artists think with intention and purpose about what they want to express and evaluate the effectiveness of what they are making during the creative process. The interplay of ideas, materials, and skills makes art challenging and rewarding. This standard recognizes that the intention of the maker and the interpretation of the viewer are both valid as part of the work of art. Learning experiences may include preparatory sketches, personal reflection while working, group

critique, inquiry, writing personal philosophies and artist's statements, and analysis or interpretation of historical and contemporary artwork and ideas.

3. Invent and Discover to Create- Artists learn by making art. They ideate and employ skills to generate works of art for functional, expressive, conceptual, and social/cultural purposes. Making can involve prototyping, building, crafting, inventing, assembling, programming, fashioning and other ways of bringing visual form to ideas.

Assessments: The article will include student work for elementary music classrooms and their connection to academics in their grade level classrooms.

Cited Research:

Assessing the unseen: National science teaching association. Assessing the Unseen | National Science Teaching Association. (n.d.). Retrieved February 9, 2022, from https://my.nsta.org/resource/?id=10.2505%2F4%2Fsc16_053_05_55

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Submission to: [The Orff Echo](#)

