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What's Wrong with Interpretive Dance? Embracing the Promise of Integrating the Arts into STEM Learning

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What's Wrong with Interpretive Dance? Embracing the Promise of Integrating the Arts into STEM Learning

Abstract

Curriculum developers Ruth Catchen and Carolyn DeCristofano explore the benefit and protocol to integrate the arts into STEM.

Keywords

STEM, STEAM, Arts Integration

What's Wrong with Interpretive Dance?
Embracing the Promise of Integrating the Arts into STEM Learning

Ruth Catchen & Carolyn DeCristofano

Not long ago, during a professional development program, one of us (Ruth) was part of a conversation about integrating the arts in STEM education. When one colleague in the program was asked what he thought about STEAM, he replied that he is "…fine with it as long as it doesn't mean using interpretative dance to imitate the movement of molecules." Of course everyone laughed, possibly imagining a chaotic scene of students flitting and flapping their arms to look like molecules in a pot of boiling water.

For months this statement haunted. Let's pause and consider the half-joke and the ensuing laughter. At first, the comment seems to convey acceptance, or at least tolerance, of the idea of STEAM education. The speaker was "fine with" the idea. Yet, both the comment and laughter also indicate a fundamental objection to the core premise of integrating the arts into STEM. A contradiction is implied: "Yes, we can integrate the arts in STEM learning, as long as the arts are not too *artsy*."

Going deeper, the response implies that types of experiences indicated by the phrase "interpretive dance" have no room in STEM learning. This suggests an inherent wariness of those parts of art that may look chaotic, arbitrary, and ultimately lacking in rigor to the logical, reductionist eye that is developed and valued as fundamental part of problem-solving within each of the STEM fields. To some observers, the addition of the arts makes for STEM*lite* rather than STEM**serious**. This view grants no credence to the implied critical thinking skills used in doing arts activities; nor does this perspective seem to allow that the trial and error inherent in many creative experiences may bring something of value to a student's ability to solve problems and meet challenges with resourcefulness and resilience.

What is Interpretive Dance?

Non-specialists may perceive it as a flighty, whimsical waving of the arms that has no ground in traditional academic thought. It may seem like random motion that others pseudo-intellectually imbue with meaning.

Lifelong dancer and performing artist Nadia Hava-Robbins, MA writes, "Interpretive dance translates particular feelings and emotions, human conditions, situations, or fantasies into movement and dramatic expression combined." (See her article: www.snowcrest.net/turningpoint/interpdance.html)

In chemistry class, the interpretive dance task might be to translate the situation of molecules into body movement that reflects key components of "heating," "boiling," "liquid," "change," or "evaporation."

We embrace the value that logic and reductionism provide to STEM disciplines. They are part of the STEM culture for good reasons. In addition, commonly shared information and acceptance of the value of evidence, numeracy, and technological prowess are all important to the STEM fields, and we would never wish to exchange that for a less-rigorous, opinion-based approach to STEM knowledge. Adding the arts to STEM learning need not threaten these core values and perspectives; instead it promises to add dimension to STEM learning. Although we recognize that some programming labeled "STEAM" or "art" may not be sufficiently rigorous, our view is that STEAM is not inherently some light and fluffy, non-rigorous means to sell more arts or more STEM to students.

From these reflections come a first principle, a sort of mantra that we can use as we progress toward rigorous STEaM curriculum:

There is no STEaM without STEM.

If we keep this mantra in mind, we can help ensure that STEM learning benefits from the introduction of the arts, and that the arts do not become a distraction or an arbitrary experience that can be replaced to greater benefit with another. Note that we do not capitalize the *a* in this "STEaM," in order to stress that *in this context* we are keeping STEM learning goals as the primary focus. There are other meaningful and important ways that the STEAM fields can interact with each other (STEM could inform A, for example) – but here we are limiting our thoughts to situations where we want arts engagement primarily to support STEM.

So…What is our vision of what the arts can *add to* STEM learning?

Arts experiences can serve several valuable purposes in the STEM classroom:

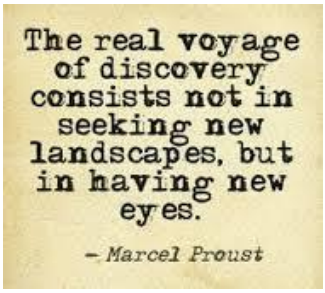
Clarify and expand understanding

- Some arts experiences prompt learners to interpret information that they have learned. In seeking to create this interpretation, students re-encounter ideas and may explore them more deeply, discovering gaps in their own recollection or aspects of the new content that, once probed, seem unclear.
- Additionally, student performances of an artwork (creating a painting, composition, dance, etc.) provide the teacher with opportunities to clarify what it is that students seem to be taking from the STEM lessons – offering unique insights into students' own ideas

Foster expansion of knowledge

- Arts experiences invite students to see the world and empirical knowledge in new ways. Educators and industry alike want to foster creativity---the ability to

> *…take something that you know or have and make it something else. It is the ability to see beyond the lines or the rules. It is opening the space for stimulating conversation and ideas, some of which may be nonsense, but being compelled to follow them to their logical end. Creativity takes experiences and marries them to apply to something new. It is seeing something that for now is not there, and then making it happen. (http://www.middleweb.com/15943/steam-action/,June 23, 2014, R. Catchen)*



Help students remember concepts and ideas by catering to specific learning styles

- **Visual** (learn through seeing)
  - Arts offer many possibilities here through opportunities to do, observe and report results.
- **Auditory** (learn through hearing)
  - Arts experiences often foster listening and communication, generating conversation and prompting questions.
- **Tactile** (learn through touch)
  - Hands-on opportunities from the arts in building and design
- **Kinesthetic** (learn through doing and moving)
  - Arts experiences often allow for children to explore the concrete world and abstract ideas through moving and doing.

Expand experiential learning in the STEM classroom

- Experience is memorable. Arts experiences enable students to:
  - Demonstrate and explore ideas in a variety of ways that deepen the quality of the learning experience.
  - Carefully designed arts experiences may lead to new questions for further discovery.

Foster STEM engagement in new ways

- Arts experiences are fun—physically and intellectually! Movement, the permission to make sound (as in a musical piece), and manipulation of arts media are often associated with "play. They rarely have a role in the traditional classroom, which means we block off modes of interaction that are part of the engaged human experience. Students who might not show an interest in the abstract concepts or even engineering challenges may find new pathways of relating to classroom learning if they are invited to engage in something they already like to do.

Open doors to understanding the impacts of STEM *on the future for both industry and the broader culture*

- The industrial domain is a wide-ranging area that includes development of new technologies with the need for them to be replicable, marketable and aesthetically pleasing. Marrying the practical with the aesthetic causes new understandings and investigation into form and function.
- Arts experiences encourage the fantastical imagination. Asking, "What is your fantasy – what *would* you do if you could?" can untether students from unnecessary constraints of the here and now, allowing them to entertain new possibilities. This question allows students to momentarily set aside given constraints in an engineering design challenge, for example, and try to envision something they hope to be able to do. This may open the door to new lines of thought that could lead to an engineering solution that actually can operate within the actual constraints. The opportunity here to deepen the learning exists as students face reality and at the same time use their imagination to envision or create.
- Culture drives technical and investigatory priorities; new knowledge and abilities in turn shape culture. Arts experiences that prompt students to respond to the implications and impacts of knowledge and abilities realized in STEM fields can heighten awareness of this mutual relationship. Personally responding through their own artistic creativity and examining artwork by peers and/or professionals expand the focus of STEM beyond the technical, potentially humanizing students' perceptions of STEM fields—in the sense of bringing in a humanities-based perspective. This may strengthen students' grasp of how critical it is that society understand science, technology, engineering, and math well enough on technical and social levels to be able to make social, political, and personal choices around priorities and policies.

Given all that we see as STEaM's promise, we have worked with colleagues over the last several months, trying to better articulate the loosely defined STEaM acronym.

- *What does it mean when we say STEAM/STEaM?*
- *How do you know if an experience is STEAM/STEaM?*
- *What does high-quality STEaM education look like?*
- *Is the "A" all-encompassing as in STEAM or is it infused as a part of the learning as in STEaM?*

Our research shows no protocol for what STEaM is or any consensus regarding best practices in STEaM education. Multiple viewpoints exist. With this in mind, we have developed some thoughts to guide our own practice as we move forward. We use these to sift possible arts lessons in search of those that stand to best serve our STEM goals in any given context. However, these details of our current work are beyond the scope of the question at hand;

What's wrong with interpretive dance? Nothing. In fact, when implemented carefully with STEM goals in mind, there can be an awful lot that's right with it.