

The Science of Dance

Contact Information

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The Science of Dance is sponsored in part by Three Rivers Community Foundation.

Target Audience & Scope

Grades K-5; 50 minutes

Synopsis

The Kennedy Center defines arts integration as *“an approach to teaching in which students construct and demonstrate understanding (of academic content) through an art form. Students engage in a creative process which connects an art form and another subject area and meets evolving objectives in both. “*

The Science of Dance is a 50 min interactive lecture demonstration. Through the integration of dance and science concepts, students will learn fundamental elements of ballet through the lens of time, motion and force. This program has been aligned with Washington State K-12 Science Standards to be compatible with the essential academic learning requirement (EALR) areas of physical, life, and earth and space science.

“Children often learn best by being absorbed in tasks that require the incidental use of skills and ideas, rather than by focusing on them in a detached way. The arts provide powerful ways of doing this.” Ken Robinson

Lesson Plan

- Mid Columbia Ballet
 - A brief introduction (the assistant artistic director and one senior company dancer) and short background on the company.

- Force and Motion in Ballet
 - Students are engaged in an activity in which they are shown a series of ballet movements and are asked to participate in a call and response using skills in observation, memory, and prediction. ‘Big ideas’ of force and motion are introduced in relationship to dance in the following ways:
 - Defining vocabulary such as position, force (push/pull), speed and direction.
 - Identifying that a greater force exerted by the dancer results in movements that are higher/faster/further/longer.

- Making predictions about how variation in speed and direction will result in variation of motion.
 - Understanding that continuous use of energy is required by dancers throughout a performance, even when the dancer seems to be un-moving, in order to maintain shapes and positions.
 - Vocabulary and concepts applied in this portion of the demonstration relate directly to the following Washington State Science Standards.
 - *EARL 4. Physical Science.* K-1 PS1A; K-1PSIC; 2-3 PS1A; 2-3 PS1B; 2-3 PSIC
- What is Time?
 - Dancers stay together by measuring time through counting beats in the music. Students play a simple game in which they clap rhythms following a set of given “rules”, while changing speeds and patterns. Students understand that time, and counting beats, is an important component to the way dancers define motion.
- What is Choreography?
 - Students are led through a choreographic process in which they participate in building a phrase of movement collaboratively. Students are asked to create movements or shapes that represent a theme based on information given previously in the demonstration. Through this interactive process, students gain a sense of ownership and classroom teachers have the opportunity to see ways in which movement can be used in the classroom as a teaching tool.
- Conclusion
 - Dance can be used to communicate and express ideas and thoughts and demonstrate our own understanding about the world. Creating movement can be a way of problem solving and showing relationships between ideas, objects or people.

Rationale for *The Science of Dance*

In the 21st century, a specific set of tools are becoming increasingly important. These skills obviously include Core Subjects, such as reading, writing, arithmetic and technology skills. Our 21st century skill toolbox isn't complete however without creativity, critical thinking, communication, and collaboration. These “4C's” are developed through the arts and this interactive performance will demonstrate to students and teachers alike how dance and the arts unlock student potential and passion for learning.

“Through...collaborative efforts in melding core curriculum with artistic expression, the participants' whole minds (and often hearts) are engaged in class, and critical thinking and creativity no longer are treated as opposite modalities.” Gail Burnaford

Intuition, self-expression and independent thinking give students the capacity to become individuals and are realms of learning that are developed through dance and the Arts. Academics teach us how to make sense of what we see and hear in the world, and the arts

teach us to make sense of what we feel and think. Dance gives us the ability to communicate with each other on a level deeper than words and across language and culture.

At Mid-Columbia Ballet, our artistic medium is ballet dance, but beyond teaching children steps and sequences we provide an important platform for children to learn how to communicate verbally and non-verbally appropriately, how to develop the focus and dedication necessary to enter the work force with confidence, how to be excellent students, and how to coordinate the intelligence of their brain with the intuition of their body.

Logistical Factors

- Can be done in a classroom setting for a single class OR in an open setting such as a cafeteria or gym for no more than three classrooms.
- This program is most effective when all classrooms are in the same grade level.
- A dialog with the classroom teacher(s) one week before the program will help to facilitate the integration of this presentation with content in the classroom.

Progression

This curriculum could easily expand into an artist-in-residency program in which Mid Columbia Ballet visits a single classroom for multiple sessions to create a more involved program. This would allow students to integrate science and dance more deeply as a vehicle for understanding and applying knowledge. Examples of themes that may easily expand into longer-term residencies include:

- Life cycle of plants
- Physical weathering of rocks
- Forces and motions of the body

In the event that a classroom teacher would be interested in collaborating with Mid Columbia Ballet to explore an arts integrated residency with a topic that is not listed above, a system is in place for working with classroom teachers to develop content specific programs that fit their needs as well as provide students with creative outlets for expression of knowledge.

Relationship to Washington State K-12 Science Learning Standards

This program has been designed as an introduction to arts integrated programming. The intention is to use state and district benchmarks in learning to target key areas where dance can relate to academic content being taught in the classroom. These benchmarks may include the following:

Force and Motion

- EARL 4. Physical Science. K-1 PS1A; K-1PSIC
- EARL 4: Physical Science 2-3 PSIA; 2-3 PS1B; 2-3 PSIC

Life Cycle of plants

- EARL 4.Life Science.2-3 LSIA

Physical Weathering of Rocks

- EARL 4. Earth and Space Science. 4-5 ES2B.