

Dance and Math Infused Lesson



Lesson Three: *Taller and Shorter Movements, Longer and Shorter Movements*

Author: Debbie Gilbert Grade Level: First

Enduring Understanding

Measurement of a movement, a shape, or an object can be compared by height (tall/short) or length (long/short).

Lesson Description (Use for family communication and displaying student art)

In this math and dance lesson, students compare tall and short height, and long and short length. Then, they explore how they can freeze and move in one spot with tall and short shapes and movements. Next, they freeze and travel with long and short shapes and movements. With partners, they lead and shadow in one spot with tall and short movements, and while traveling with long and short movements.

Learning Targets and Assessment Criteria

Target: Moves in self-space leading and shadowing a partner, varying the height of the movement.

Criteria: Dances in one spot with a partner, performing tall and short movements as a leader in front and copying movement as a follower in back.

Target: Moves in general space leading and shadowing a partner, varying the length of the movement.

Criteria: Dances through space with a partner, performing long and short movements as a leader in front and copying movement as a follower in back.

Vocabulary	Materials	Learning Standards
<p>Arts Infused: Compare Height Short Tall Length Long Short</p> <p>Math: Measure</p> <p>Arts: General Space Movement Self-space Shadow Shape Space Bubble</p>	<p>Museum Artworks or Performance:</p> <p>Seattle, WA Pacific Northwest Ballet UW World Series of Dance</p> <p>Tacoma, WA Broadway Center for the Performing Arts</p> <p>Materials <i>Math Dances</i> CD by Debbie Gilbert; <i>Music for Creative Dance, Volume IV</i> by Eric Chappelle; CD player; White board or chart paper & markers; Writing pencil; Computer with internet connection and projector; Drum/percussion instrument; Class Assessment Worksheet</p> <p>Video Ballet de l'Opéra de Lyon - Benjamin Millepied / Pièces de repertoire http://www.youtube.com/watch?v=KUPK6vy6FLw#t=22 <i>Sum Stravinsky</i> excerpt (Video link provided to Arts Impact, courtesy Pacific Northwest Ballet) http://www.youtube.com/watch?v=5TsiOKOpfus</p> <p align="center"><i>continued</i></p>	<p>Arts State Grade Level Expectations <i>For the full description of each WA State Arts Grade Level Expectation, see: http://www.k12.wa.us/Arts/Standards</i></p> <p>1.1.1 Elements: Space 1.2.1 Skills and Techniques: Non-locomotor and Locomotor Movements 1.4.1 Audience Skills 2.1.1 Creative Process 2.2.1 Performance Process 2.3.1 Responding Process 4.2.1 Connection between Dance and Math</p> <p>Early Learning Guidelines (Pre-K – Grade 3) <i>For a full description of Washington State Early Learning and Child Development Guidelines see: http://www.del.wa.gov/development/guidelines/</i> (1st grade) 3. Touching, seeing, hearing, and moving around: Using the large muscles (gross motor skills): refine skills for moving from one place to another (locomotor skills); develop skills for moving in place (non-locomotor), such as bending and twisting. (1st grade) 6. Learning about my world: Math: measure lengths of objects by using a shorter object. Arts: create and respond to arts; become aware of skills needed to dance around the room.</p> <p>Common Core State Standards (CCSS) in Math <i>For a full description of CCSS Standards by grade level see: http://www.k12.wa.us/CoreStandards/Mathematics/default.aspx</i> 1.MD. Measure lengths indirectly. 1MD.1. Compare the lengths of two objects by using a third object</p> <p align="center"><i>continued</i></p>

Pacific Northwest Ballet images:
Dancers in Jerome Robbins' *West Side Story Suite*



Dancers in George Balanchine's *Apollo*;
Choreography © The George
Balanchine Trust



Kylee Kitchens in Mark Morris' *Pacific*



Mara Vinson in George Balanchine's
Coppelia; Choreography © The
George Balanchine Trust



©Angela Sterling

CCSS Mathematical Practices

- MP.4. Model with mathematics.
- MP.7. Look for and make use of structure.

ICON KEY:

 = Indicates note or reminder for teacher

 = Embedded assessment points in the lesson

Pre-Teach

Practice the *Math BrainDance*, see lesson step 3. Compare objects by height (tall/short) and length (long/short).

Lesson Steps Outline

DAY ONE

1. Introduce connecting dance and math with measurement. Look at height in photographs of professional dancers. Ask students to compare objects in the room by height (tall/short).

2. Remind students about agreements for appropriate dance behavior.

3. Lead students in *Math BrainDance* warm-up.

Music: "Math BrainDance (First Grade)" #2, *Math Dances* by Debbie Gilbert

4. Lead exploration of taller and shorter shapes and movements in self-space with Move and Freeze. Play a drum for accompaniment.

5. Model and guide shadowing exploration of tall and short shapes and movements in self-space.

Music: "Pathways" #14, *Music for Creative Dance, Volume IV* by Eric Chappelle

 Criteria-based teacher checklist, peer assessment: Dances in one spot with a partner, performing tall and short movements as a leader in front and copying movement as a follower in back.

6. Guide class reflection connecting dance and math.

 Criteria-based reflection: Makes a connection between dance and math.

DAY TWO

1. Introduce connecting dance and math with measurement. Look at length in photographs or video of professional dancers. Ask students to compare objects in the room by length (long/short).

2. Remind students about agreements for appropriate dance behavior.

3. Lead students in *Math BrainDance* warm-up.

Music: "Math BrainDance (First Grade)" #2, *Math Dances* by Debbie Gilbert

4. Lead exploration of longer and shorter shapes and movements in general space with Move and Freeze. Play a drum for accompaniment.

5. Model and direct shadowing exploration of long and short shapes and movements in general space.

Music: "Pathways" #14, *Music for Creative Dance, Volume IV* by Eric Chappelle

Criteria-based teacher checklist, pair share: Dances through space with a partner, performing long and short movements as a leader in front and copying movement as a follower in back.

6. Guide class reflection connecting dance and math.

Criteria-based reflection: Makes a connection between dance and math.

LESSON STEPS

Day One

- ▣ Prepare the classroom for dance.



Moving Desks/Set-up

1. Introduce connecting dance and math with measurement. Look at height in photographs of professional dancers. Ask students to compare objects in the room by height (tall/short).

- *This is a lesson that is a dance lesson and a math lesson at the same time. We'll be Dancing Mathematicians and explore height with tall movements and short movements.*

▣ You may use these photos: Pacific Northwest Ballet: Dancers in Jerome Robbins' *West Side Story Suite* and Dancers in George Balanchine's *Apollo*. You could also choose to find your own photos that represent a variety of styles and cultures and show tall and short shapes. You could review, for example, The UW World Dance Series, <http://uwworldseries.org/world-dance>.



- *Here are photos of professional dancers from Pacific Northwest Ballet. Which dancers are taller and which dancers are shorter? How do you know?*
- *Before we start moving, let's talk about measurement in the classroom. Is your desk/table taller or shorter than my desk? Let's test our idea. I'll use a pencil as my measuring tool. How many pencils tall is my desk? How many pencils tall is this student's desk?*
- *Point to something in the room that's taller than my desk. What is it? Point to something that's shorter than my desk. What is it?*

2. Remind students about agreements for appropriate dance behavior.

- *Remind me, how can you be creative and safe at the same time?*



Movement Safety

3. Lead students in *Math BrainDance* warm-up. (BrainDance originally developed by Anne Green Gilbert, www.creativedance.org, reference: *Brain-Compatible Dance Education*, video: *BrainDance, Variations for Infants through Seniors*.)

Music: "Math BrainDance (First Grade)" #2, *Math Dances* by Debbie Gilbert



BrainDance by
Artist Mentor

- *The BrainDance is designed to warm up your body and make your brain work better at the same time. Notice when we do movements that are tall and short in the BrainDance.*

Breath

- *Dancing Mathematicians, breathe softly.*



BrainDance by
Students

Tactile

- *Tap from the top of your head all the way to your toes. We'll count by twos to forty: 2, 4, 6 ... 40.*

Core-Distal

- *Grow into a tall shape and shrink into a short shape.*

Head-Tail

- *Use your whole body and curl your backbone forwards and backwards and from side to side. We'll count by tens starting at forty and go to one hundred twenty: 40, 50, 60 ... 120.*

Upper Half

- *Move an upper quarter of your body and freeze everything else. Move the other upper quarter. Now move the whole top half of your body while the lower half freezes.*

Lower Half

- *Move a lower quarter of your body and freeze everything else. Move the other lower quarter. Now move the whole lower half of your body while the upper half freezes.*

Body-Half Right

- *Do short and long movements with the right half of your body while the left half is frozen. We'll count backwards from 20 to 10: 20, 19, 18 ... 10.*

Body-Half Left

- *Do short and long movements with the left half of your body while the right half is frozen. We'll count backwards from 20 to 10: 20, 19, 18 ... 10.*

Eye-Tracking

- *Focus on your right thumb. Move it from one side to the other and up and down. Watch your left thumb moving from side to side and up and down.*

Cross-Lateral

- *Reach across your body up high, up high, down low, down low. We'll count by fives to eighty: 5, 10, 15 ... 80.*

Vestibular

- *Turn, then freeze in a tall shape. Turn, then freeze in a short shape. Turn, then freeze in a wide shape. Turn, then freeze in a narrow shape.*

Breath

- *Breathe softly, Dancing Mathematicians.*

4. Lead exploration of taller and shorter shapes and movements in self-space with Move and Freeze. Play a drum for accompaniment.



Prompting for Creativity

- *We are going to dance Move and Freeze. That means when you hear the drum, you move, and when it stops, you freeze in a shape, like a statue. Make sure you have a space bubble around you so you don't bump or touch anyone.*
- *We'll dance in self-space; that means you'll stay in one spot. Stretch. Freeze.*
- *Stretch taller. Freeze in a tall shape.*
- *Ask yourself, were your stretches taller? How do you know that's true?*
- *Stretch shorter. Freeze in a short shape.*
- *Ask yourself, were your stretches shorter? How do you know that's true?*

▣ Repeat with shaking, bending, and twisting.

5. Model and guide shadowing exploration of tall and short shapes and movements in self-space.

Music: "Pathways" #14, *Music for Creative Dance, Volume IV*, by Eric Chappelle



Shadowing in Self-space with Taller and Shorter Movements

▣ When assessing the criteria in this lesson, any students who are not meeting criteria will be very clear to you, so you may want to use a reverse checklist, putting a "0" where students have not met criteria, rather than trying to notate every single one who has met criteria. You can go back later and give those who have met criteria a "1." This information will let you know who needs more practice, so you can return to it in the future.

a) Demonstrate with a student volunteer.

- *My shadow will stand behind me. I will be the leader and my partner is my shadow. When I am the leader, my job is to do tall movements that my partner can follow. I will move slowly, staying in one spot, and make sure that my partner can see all of my movements.*
- *When the music stops, we'll freeze and then turn around and it will be my partner's turn to lead. The new leader will do shorter movements and I will be the shadow and copy them.*

b) Ask student to find a partner. Verbally cue students as they shadow with taller and shorter movements.

- *First leaders, use tall movements. Freeze in a matching shape.*
- *Second leaders, use shorter movements. Freeze in a matching shape.*
- *First leaders, use even shorter movements. Freeze in a matching shape.*
- *Second leaders, use taller movements. Freeze in a matching shape.*

- *First leaders, you can choose taller or shorter movements. Freeze in a matching shape.*
- *Second leaders, you can choose taller or shorter movements. Freeze in a matching shape.*

c) Facilitate pair share reflection.

- *Turn and talk with your partner. Did you choose to do shorter or taller movements?*
- *Partners, how did you know that was true?*



Performer and Audience Expectations

Optional: If there is time, you could choose to have half of the class perform, while the other half is the audience and then they could switch roles. Remind them of the expectations for the performers and the audience.

Criteria-based teacher checklist, peer assessment: Dances in one spot with a partner, performing tall and short movements as a leader in front and copying movement as a follower in back.

6. Guide class reflection connecting dance and math.

- *Today, you made shapes and movements that were taller and shorter in height, and you compared them.*
- *Dancing Mathematicians wonder why things are true. Let's test our ideas. I need two volunteers. Volunteer 1, make a short shape. Volunteer 2, make a tall shape.*
- *I am going to use this pencil to measure the height of each shape. Shape 1 is ____ pencils high. Shape 2 is ____ pencils high. What do you notice?*
- *The next time in math, when you measure to figure out what is taller or shorter, remember how you did it with your whole bodies in movement.*

Criteria-based reflection: Makes a connection between dance and math.

Day Two

1. Introduce connecting dance and math with measurement. Look at length in photographs or video of professional dancers. Ask students to compare objects in the room by length (long/short).

- *This is a lesson that is a dance lesson and a math lesson at the same time. We'll be Dancing Mathematicians and explore length with long and short movements.*

▣ You can choose to use photographs or video. If you choose photographs, you may use these photos: Pacific Northwest Ballet: Kylee Kitchens in Mark Morris' *Pacific* and Mara Vinson in George Balanchine's *Coppelia*. You could also choose to find your own photos or videos that represent a variety of styles and cultures. You could review, for example, The UW World Dance Series, <http://uwworldseries.org/world-dance>.



- *Here are photos of professional dancers from Pacific Northwest Ballet. In this picture, the dancer does it look like the dancer is taking long or short steps? In the other picture, does it look like the dancers are taking long or short steps? What do you see that tells you that one movement might be long and the other might be short?*

▣ If you choose to use video, show one or more of the following video clips of professional dancers. Ask students to identify when the dancers are moving with shorter movements or longer movements. If time is limited, you could do this part of the strategy on another day.

Ballet de l'Opéra de Lyon - Benjamin Millepied / Pièces de repertoire
<http://www.youtube.com/watch?v=kUPK6vy6FLw#t=22>

Sum Stravinsky excerpt (Video link provided to Arts Impact, courtesy Pacific Northwest Ballet)
<http://www.youtube.com/watch?v=5TsIOKOpfus>

- *Before we start moving, let's talk about measurement in the classroom.*
 - *Is your arm longer or shorter than my arm? Point to something that's shorter than your arm. Point to something that's longer than your arm. How do you know?*
-

2. Remind students about agreements for appropriate dance behavior.

- *Remind me, how can you be creative and safe at the same time?*
-

3. Lead students in *Math BrainDance* from Day One.

- *What long and short movements did we do in the BrainDance?*
-

4. Lead exploration of longer and shorter shapes and movements in general space with Move and Freeze. Play a drum for accompaniment.

- *We are going to dance Move and Freeze again. Remember, that means when you hear the drum, you move, and when it stops, you freeze in a shape, like a statue. Make sure you have a space bubble around you so you don't bump or touch anyone.*
 - *We'll dance in general space; that means you can travel through all the empty spaces in the room.*
 - *Walk. Freeze.*
 - *Take shorter steps (heel to toe). Freeze in a short shape.*
 - *Take even shorter steps (tiptoe). Freeze in a shorter shape.*
 - *Ask yourself, were your steps shorter? How do you know that's true?*
 - *Take longer steps (leap). Freeze in a long shape.*
 - *Ask yourself, were your steps longer? How do you know that's true?*
-

5. Model and direct shadowing exploration of long and short shapes and movements in general space.

Music: "Pathways" #14, *Music for Creative Dance, Volume IV*, by Eric Chappelle



Shadowing in General Space with Longer and Shorter Movements

a) Demonstrate with a student volunteer.

- *My shadow will stand behind me. I will be the leader and my partner is my shadow, but this time we will be traveling through general space making short movements. We'll move through the empty spaces in the room, not cutting in between other leaders and shadows.*
- *When the music stops, we'll freeze and then turn around and it will be my partner's turn to lead. The new leader will do longer movements and I will be the shadow and copy them.*

b) Ask students to find a partner. Verbally cue shadowing with longer and shorter movements.

- *First leaders, use short movements. Freeze in a matching shape.*
- *Second leaders, use longer movements. Freeze in a matching shape.*
- *First leaders, use even longer movements. Freeze in a matching shape.*
- *Second leaders, use shorter movements. Freeze in a matching shape.*
- *First leaders, you can choose longer or shorter movements. Freeze in a matching shape.*
- *Second leaders, you can choose longer or shorter movements. Freeze in a matching shape.*

c) Facilitate pair share reflection.

- *Turn and talk with your partner. Did you choose to do shorter or longer movements? Partners, how did you know that was true?*

☐ Optional: If there is time, you could choose to have half of the class perform, while the other half is the audience and then they could switch roles. Remind them of the expectations for the performers and the audience.

☑ Criteria-based teacher checklist, pair share: Dances through space with a partner, performing long and short movements as a leader in front and copying movement as a follower in back.

6. Guide class reflection connecting dance and math.

- *Today, you made shapes and movements that were longer and shorter in length, and you compared them.*
- *Dancing Mathematicians wonder why things are true. Let's test our ideas. I need two volunteers. Volunteer 1, make a long step. Volunteer 2, make a short step.*
- *I am going to use this pencil to measure the length of each step. Step 1 is ____ pencils long. Step 2 is ____ pencils long. What do you notice?*
- *The next time in math, when you measure to figure out what is longer or shorter or taller or shorter, remember how you did it with your whole bodies in movement.*

☑ Criteria-based reflection: Makes a connection between dance and math.

ARTS IMPACT LESSON PLAN Dance and Math Infusion

First Grade Lesson Three: *Taller and Shorter Movements, Longer and Shorter Movements*

CLASS ASSESSMENT WORKSHEET

Disciplines	DANCE/MATH				DANCE/MATH				Total 8
	Shadowing in Self-space Measurement				Shadowing in General Space Measurement				
Concept	Dances in one spot with a partner, performing tall and short movements as a leader in front and copying movement as a follower in back.				Dances through space with a partner, performing long and short movements as a leader in front and copying movement as a follower in back.				
Criteria									
Students	Leads	Follows	Tall	Short	Leads	Follows	Long	Short	
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									
16.									
17.									
18.									
19.									
20.									
21.									
22.									
23.									
24.									
25.									
26.									
27.									
28.									
29.									
30.									
Total									
Percentage									

What was effective in the lesson? Why?

What do I want to consider for the next time I teach this lesson?

What were the strongest connections between dance and math?

Teacher: _____

Date: _____

DANCE AND MATH LESSON: **Taller and Shorter Movements, Longer and Shorter Movements**

Dear Family:

Today your child participated in an **Arts and Math** lesson. We talked about how both mathematicians and dancers can compare objects and movements by height and length.

- We compared objects in our classroom by tall and short height, and long and short length.
- We did the Math BrainDance to warm up our brains and bodies.
- We moved in one spot with tall and short shapes and movements.
- We traveled through the room with long and short shapes and movements.
- We shadowed with a partner in one spot with tall and short movements, and while traveling with long and short movements.
- We tested our ideas by measuring the height and length of our shapes.
- We reflected on how we can learn more about measurement in math by remembering how we used it with our whole bodies in dance.

At home, you could compare furniture or clothing by height or width. Ask your child to show you how to be a leader and a shadow and how to make tall and short and long and short movements.

Enduring Understanding

Measurement of a movement, a shape, or an object can be compared by height (tall/short) or length (long/short).