## ARTS IMPACT LESSON PLAN

Dance and Math Infused Lesson

Lesson One: Parts of the Whole: A Mirror Dance

Author: Debbie Gilbert Grade Level: First

Enduring Understanding

A whole circle or body shape can be divided into four quarters or two halves.

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

In this math and dance lesson, students observe how a circle can be divided into four quarters or two

halves. Then, they explore how they can move in one spot or travel using either their whole bodies,

one half of their bodies, or one fourth of their bodies. With partners, they lead and mirror using

movements with one quarter of their bodies, half of their bodies, and their whole bodies.

Learning Targets and Assessment Criteria

Target: Dances with all and fractional parts of the body in self-space.

Criteria: Moves in one spot with the whole body and parts of the body.

Target: Dances with all and fractional parts of the body in general space.

Criteria: Travels with the whole body and parts of the body.

Target: Moves as a leader and follower using all and fractional parts of the body.

Criteria: Initiates and mirrors movements with a quarter of the body, half of the body, and all of

the body.

Vocabulary

Arts Infused:

Part

Whole

Math:

Circle

Fourth

Half

Quarter

Arts:

General Space

Mirror

Movement

Self-space

Shape

Space Bubble

Materials

Museum Artworks or Performance

Seattle, WA

Pacific Northwest Ballet

UW World Series of Dance

Tacoma, WA

Broadway Center for the Performing Arts

Materials

Math Dances CD by Debbie Gilbert;

Music for Creative Dance, Volume IV by

Eric Chappelle; CD player; Models or

diagrams of circles and of circles divided

into halves and quarters; White board or

chart paper & markers; Drum/percussion

instrument; Class Assessment

Worksheet

continued

Learning Standards

WA Arts State Grade Level Expectations

For the full description of each WA State Arts

Grade Level Expectation, see:

http://www.k12.wa.us/Arts/Standards

1.1.1 Elements: Shape, Space

1.2.1 Skills and Techniques: Body Part Isolation,

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

Early Learning Guidelines (Pre-K – Grade 3)

For a full description of Washington State Early

Learning and Child Development Guidelines see:

http://www.del.wa.gov/development/guidelines/

(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:

divide circles and rectangles into halves or fourths

to develop understanding of part/whole. Arts:

create and respond to arts; become aware of

skills needed to dance around the room.

continued

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Common Core State Standards (CCSS) in

Math

For a full description of CCSS Standards by grade

level see:

http://www.k12.wa.us/CoreStandards/Mathemati

cs/default.aspx

1.G. Reason with shapes and their attributes.

1.G.3. Partition circles into two and four equal

shares, describe the shares using the words

halves, fourths, and quarters, and use the

phrases half of, fourth of, and quarter of.

Describe the whole as two of or four of

the shares.

CCSS Mathematical Practices

MP.2. Reason abstractly and quantitatively.

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Pre-Teach

Practice the Math BrainDance, see lesson step 3. Practice constructing

and deconstructing whole circles from half and quarter circles with manipulatives.

Lesson Steps Outline

1. Introduce dancing the parts of the whole. Display diagrams or models of a

whole circle, a circle divided into halves, and a circle divided into quarters.

2. Prepare students for dancing by creating agreements for appropriate dance

behavior. Chart student responses.

3. Lead students in Math BrainDance warm-up.

Music: “Math BrainDance (First Grade)” #2, Math Dances by Debbie Gilbert

4. Direct exploration of movements with whole bodies, half of the bodies, and

one quarter of the bodies in self and general space with Move and Freeze. Play a

drum or other percussion instrument for accompaniment.

! Criteria-based teacher checklist: Moves in one spot with the whole body and

parts of the body. Travels with the whole body and parts of the body.

5. Demonstrate and guide students in mirroring with one fourth of their bodies,

one half of their bodies, and their whole bodies. Analyze photos of

dancers mirroring.

Music: “Monkey Fiddle Chant #7, Music for Creative Dance, Volume IV by

Eric Chappelle

! Criteria-based teacher checklist: Initiates and mirrors movements with a

quarter of the body, half of the body, and all of the body.

6. Lead performance of mirroring and response. Discuss performer and

audience behavior.

! Criteria-based teacher checklist, peer assessment: Initiates and mirrors

movements with a quarter of the body, half of the body, and all of the body.

7. Guide class reflection connecting dance and math. Demonstrate adding parts

to the whole with a model or diagram as you speak.

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

ICON KEY:

" = Indicates note or reminder for teacher

! = Embedded assessment points in the lesson

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LESSON STEPS\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ " Prepare the classroom for dance.

Moving Desks/Set-up

1. Introduce dancing the parts of the whole. Display diagrams or models of a whole circle,

a circle divided into halves, and a circle divided into quarters.

• Today, we are doing dance and math at the same time. We’ll be Dancing Mathematicians!

Dancing Mathematicians ask questions and look for answers. They can use movements with

their bodies to figure out why something is true in math.

• We’ll be dancing with our whole bodies, half of our bodies, and one quarter of our bodies.

• Here’s a whole circle. Sometimes we’ll dance with our whole bodies. (Demonstrate.)

• Here’s a half circle. Sometimes we’ll dance with the upper half of our bodies. (Demonstrate.)

Sometimes we’ll dance with the lower half of our bodies. (Demonstrate.) Sometimes we’ll dance

with the right half of our bodies. (Demonstrate.) Sometimes we’ll dance with the left half of our

bodies. (Demonstrate.)

• Here’s a quarter circle. Sometimes we’ll dance with one quarter, or one fourth, of our

bodies. (Demonstrate.)

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2. Prepare students for dancing by creating agreements for appropriate dance

behavior. Chart student responses.

• How can you be creative and safe at the same time?

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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

• Notice when we do movements with our whole bodies, half of our bodies, and one

quarter of our bodies in the BrainDance warm-up.

Breath

• Dancing Mathematicians, breathe softly.

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.

BrainDance by

Artist Mentor

BrainDance by

Students

Movement Safety

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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.

• When did we do movements with our whole bodies, half of our bodies, and one quarter of our

bodies in the BrainDance?

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4. Direct exploration of movements with whole bodies, half of the bodies, and

one quarter of the bodies in self-space and general space with Move and Freeze.

Play a drum or other percussion instrument for accompaniment.

3 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.

• We are going to dance Move and Freeze. When I play the drum, you’ll move, and when the

drum stops, you’ll freeze in a shape, like a statue. Make sure you have a space bubble around

you so you don’t bump or touch anyone.

Prompting for Creativity

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a) Cue students to move with whole bodies in self-space.

• Find a perfect empty space in the room. Move with your whole body in self-space —

that’s staying in one spot. Freeze.

• I saw swinging, bouncing, wiggling, bending with your whole bodies. Let’s do it again.

(Repeat.)

b) Cue students to move with whole bodies in general space.

• Move with your whole body in general space — that’s traveling in the empty space.

Freeze.

• I saw stomping, jumping, sliding, flying with your whole bodies. Let’s do it again.

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5. Demonstrate and guide students in mirroring with one fourth of their

bodies, one half of their bodies, and their whole bodies. Analyze photos of

dancers mirroring.

Music: “Monkey Fiddle Chant #7, Music for Creative Dance, Volume IV by Eric Chappelle

a) Display photographs of professional dancers mirroring.

3 You may use these photos: Pacific Northwest Ballet: Sarah Ricard Orza and Lucien Postlewaite in

Jerome Robbins’ West Side Story Suite and Dancers in Twyla Tharp’s In the Upper Room. 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, or search for

dance video that illustrates mirroring.

• Here are two pictures of dancers from Pacific Northwest Ballet demonstrating mirroring.

What do you see?

b) Model mirroring with a student volunteer.

• You’ll sit facing your partner. In all the mirroring activities, the idea is to move slowly so

you are doing the same movement at the same time. This is not about tricking your

partner. One person is the leader then trades. The two of you are working together

leading and following. I’ll lead first and use only one fourth of my body. Then my

partner will lead.

c) Direct students to find a partner, and to mirror with one quarter of their bodies.

3 Pause the music when you give cues.

• First leader, decide which fourth of your body you will move. Begin. Freeze.

• Second leader, which quarter of your body will you move? Begin. Freeze.

d) Direct students to mirror with one half of their bodies. Demonstrate adding one

fourth of the body to another fourth, so you have one half of the body.

• If you add the quarter of your body that you just used to another quarter, you’ll have

half of your body. For example, if I have been dancing with my top right side (my right

arm, my right shoulder, the right side of my face) and I add my top left side, I have the

top half of my body for mirroring this time. You may mirror sitting or standing this time.

Mirroring with

Quarter, Half, and

Whole Bodies

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e) Direct students to mirror with their whole bodies. Demonstrate adding one half of

the body to another half, so you dance with the whole body.

• Add the half of your body that you just used to the other half and you’ll have a whole

body. This time when you mirror, move with your whole body.

þ Criteria-based teacher checklist: Initiates and mirrors movements with a quarter of the body, half of

the body, and all of the body.

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6. Lead performance of mirroring and response. Discuss performer and

audience behavior.

• Half of you will demonstrate mirroring with your partners, and the other half

will be the audience. Then, you’ll switch. The dancers can choose if they want

to lead with one quarter, one half, or their whole bodies.

• Before we begin, what is the job of the audience? What is the job of the performers?

• Audience, after the performance, I’ll ask you which dancers were using one fourth, which were

using one half, and which were using their whole bodies. I’ll also ask you how you know that it

is true.

þ Criteria-based teacher checklist, peer assessment: Initiates and mirrors movements with a quarter

of the body, half of the body, and all of the body.

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7. Guide class reflection connecting dance and math. Demonstrate adding parts to the

whole with a model or diagram as you speak.

• Today, you mirrored each other using one quarter of your bodies. Then, you added a quarter of

your bodies to mirror with half of your bodies. Finally, you added another half to the first half

and you mirrored with your whole bodies. Dancing Mathematicians, turn and talk to someone

close to you and talk about what you discovered.

• Let’s look at our model (or diagram) from the beginning of the class. Which one shows the

fourth or quarter of the circle? Which one shows the half circle, which is the same as two

quarters? How many halves make up our whole circle? How many quarters make up our

whole circle?

• The next time in math that you divide a shape into parts, or put the parts together into a whole

shape, remember how you did it with your whole bodies in movement.

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

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Performer and Audience

Expectations

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ARTS IMPACT LESSON PLAN Dance and Math Infusion

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CLASS ASSESSMENT WORKSHEET

Disciplines DANCE/MATH Total

Concept Self-space Parts and 7

Whole

General Space Parts

and Whole

Mirroring

Parts and Whole

Criteria

Student Name

Moves in one spot with

the whole body and

parts of the body.

Travels with the whole

body and parts of the

body.

Initiates and mirrors movements with

a quarter of the body, half of the

body, and all of the body.

Whole Parts Whole Parts Quarter Half Whole

1.

2.

3.

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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:

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