

Professional Development: Arts Integration

A Senior Honors Thesis

Submitted in Partial Fulfillment of the Requirements
for Graduation in the Honors College

By

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Educational use of this paper is permitted for the purpose of providing future students a model example of an Honors senior thesis project.

Grade Level: 3

Subject / Content area: Mathematics and Music

Unit of Study: Number and Operations-Fractions

Lesson Title: Building an Understanding of Fractions through Music (Day 1)

<p>Central Focus for the learning segment: Students will develop an understanding of fractions by forming equal groups, breaking objects into equal parts, and making connections to real-life fraction use, all through the use of the 5 major art disciplines.</p>
<p>Content Standard(s): MATH: NY-3.NF Number and Operations- Fractions 1. Understand a unit fraction, $1/b$, is the quantity formed by 1 part when a whole is partitioned into b equal parts. Understand a fraction a/b as the quantity formed by a parts of size $1/b$. 3. Explain equivalence of fractions and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size b. Recognize and generate equivalent fractions. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. MUSIC: 3rd MU:Cr1.1.3 – a. Generate rhythmic and melodic ideas, and identify connection to specific purpose and/or context (such as personal and social).</p>
<p>Learning Objectives associated with the content standards: Students will be able to understand the concept of fractions by engaging in a musical representation.</p>
<p>Instructional Resources and Materials to engage students in learning: Each student will need two pencils (preferably unsharpened for safety purposes,) math worksheet, and pencil.</p>
<p>Instructional Strategies, Learning Tasks, and TimeLine that support diverse student needs. (Include what you and students will be doing.): ENGAGE (15 minutes): Students will learn part of a song that will help deepen their understanding of fractions. While learning the song, students will learn about rhythm by keeping the beat. The students will do this using two pencils, unless wooden rhythm sticks are available to the class. The teacher will bring up the song video about fractions on the smartboard (or something similar) and students will watch it one time through following along with the teacher to keep the beat. Students can choose to sit on the carpet in front of the teacher and use the floor, sit and use their desks, or stand and use a desk or other classroom surface. Teach students the lyrics by signing them and having them repeat them back to you (whole class.) Next, watch the video again having students sing along as they keep the beat. Lastly, do it without the video. ELABORATE (5- 10 minute discussion, 25- 30 minutes problem set): The class will discuss how music has a purpose. In this case, the purpose is to make connections with the math content and to collaborate with peers. Additionally, music has the purpose of bringing joy. Directly ask the students, “what purpose does music serve to you?” After students share their thoughts, ask “does music make math more fun for you?” Discuss how music served the purpose of being enjoyable yet teaching them math content as well. Students will complete a math problem set from the NYS curriculum after learning the song. Offer the students to work in partners, small groups, or individually. EVALUATE (10 minutes): Students will perform the song in groups, showing their ability to meet the music standards. Students will also complete a written exit ticket to demonstrate the math</p>

concepts that they learned. The exit ticket should be completed individually in order to provide the teacher with an accurate formal assessment.

Differentiation and planned universal supports: The arts integration instructional approach of this lesson is in itself a mode of differentiation. This is because this style of lesson planning and facilitating meets the learning style of a wide variety of students. This integrated lesson meets 7 of the 8 multiple intelligences; move it from the classroom to a spot outside in which students can be a part of nature (naturalist learners) and it will meet all 8. Being up and moving around the room gives lesson time to spatial and bodily-kinesthetic learners, small group and whole class collaboration meets the needs of interpersonal learners, independent work time is for intrapersonal learners, class discourse and teacher-student discussions work best for linguistic learners, and the math worksheets are directly helpful for logical learners. However, there are also additional universal supports embedded in the lesson. The lesson is scaffolded in that all concepts have been previously introduced before being elaborated in order to maximize student understanding. All directions are provided orally and written to meet the needs of struggling readers and ELL students. Technology is used to provide visual supports, tangibles are used to help students directly interact with a concept, and the teacher makes themselves available throughout the lesson to provide any student with additional assistance when necessary. The teacher is a participant in many parts of the lesson, not just a facilitator. This allows students someone to look for an example and ask for help if they are having difficulty. Additionally, students work in groups to support one another and these groups can be formed by the teacher with specific needs in mind. Pair confident performers with those who need encouragement. Pair strong readers with those who struggle. Pair students who are behind grade level in math with those who are excelling.

One Language Function students will develop: Students will develop the language function of *explain*. In class discussion, students will *explain* what purpose music serves in their lives.

Additional language demands and language supports: Students will also meet the language demand of discourse by participating in whole class, small group, and/or partner discussions. Students will need to know the following vocabulary in order to successfully meet this demand: rhythm, beat, melody, purpose, partitioning, fractions, unit fractions, equal, part, whole, and half.

Type of Student Assessments and what is being assessed:

- **Informal Assessment:** The teacher will informally assess students through observation of their level of participation and accuracy shown throughout the lesson.
- **Formal Assessment:** The teacher will formally assess students through an exit ticket. This will be collected to evaluate student understanding of the content standards.
- **Modifications to the Assessments:** For struggling readers, the exit ticket should be read aloud to ensure that the validity of the assessment. The math concepts are being assessed and need to be done so without relying on a student's literacy skills. Additionally, for some students a scaffolding process may be necessary. This may include providing pre-written portions on the exit ticket that can be removed later in the unit.

Evaluation Criteria: Students will be evaluated based on the art and math standards. Student understanding will be evaluated by observation (music) and exit tickets (math). The class will be ready to move on to the next lesson if 85% of the students complete the exit ticket accurately. However, remediation and/or reteaching will be necessary for the remaining 15%. Exit tickets will be graded on a 1-4 scale. 1 representing that the student does not have an understanding of the lesson

standard, 2 representing that the student has some understanding of the content standard but needs further instruction, 3 representing that the student is meeting the standards, and 4 representing that the student is exceeding the standard.

Relevant theories and/or research best practices:

Understanding by Design (UbD)- scaffolded lesson planning prepares students for success. Students first learn the standards by watching the teacher demonstrate, then by working together with the teacher, and finally by working on their own. This is the “I do, we do, you do” approach.

Universal Design for Learning (UDL) - Arts Integration encompasses a method of instruction that allows all students to be involved in a way that works best for them.

Multiple Intelligences- Not all students learn the same. This theory establishes the many ways in which student learning varies. Arts integration allows the teacher to meet many of these learning styles within one lesson.

Inquiry-Based Learning- Arts integration allows students the opportunity deepen their learning through their own exploration of the content. The arts provide an engaging way to use the math concepts rather than being told them.

Grade Level: 3

Subject / Content area: Mathematics and Visual Art

Unit of Study: Number and Operations-Fractions

Lesson Title: Building an Understanding of Fractions through Visual Art (Day 2)

<p>Central Focus for the learning segment: Students will develop an understanding of fractions by forming equal groups, breaking objects into equal parts, and making connections to real-life fraction use, all through the use of the 5 major art disciplines.</p>
<p>Content Standard(s): MATH: NY-3.NF Number and Operations- Fractions 1. Understand a unit fraction, $1/b$, is the quantity formed by 1 part when a whole is partitioned into b equal parts. Understand a fraction a/b as the quantity formed by a parts of size $1/b$. 3. Explain equivalence of fractions and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size b. Recognize and generate equivalent fractions. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. VISUAL ART: 3rd VA:Cr2.1.3 – a. Create artwork using a variety of artistic processes and materials. 3rd VA:Cr2.2.3 - a. Demonstrate an understanding of the safe and proficient use of materials, tools, and equipment for a variety of artistic processes.</p>
<p>Learning Objectives associated with the content standards: Students will be able to break an object into equal parts to represent a given fraction by creating a visual representation using a variety of art supplies.</p>
<p>Instructional Resources and Materials to engage students in learning: Paper, construction paper, scissors, glue, crayons, colored pencils, markers, and printouts. Each student will need a whiteboard and dry erase marker.</p>
<p>Instructional Strategies, Learning Tasks, and TimeLine that support diverse student needs. (Include what you and students will be doing.): ENGAGE (30 minutes): Students will have the option to use materials to create a drawing of a commonly divided object, or use materials to artistically develop the printout you provide. Start with a class discussion in which you encourage students to share ideas, starting by sharing the print-out options you will provide (pizza, chocolate bar, cake) This allows the option of creative freedom (with teacher approval) and provides a scaffolded option. ELABORATE (30 minutes): The students will then be asked to cut their image into equal parts to match the fraction written on the board. The teacher will start with $1/2$ and the students will demonstrate their understanding by cutting their image into 2 equal parts. The class will repeat the process for $1/4$, and $1/8$. Next, students will be asked to use their personal white boards to write the fraction that matches the amount of pieces the teacher shows. The teacher will have their pizza on the board cut in pieces, and will take pieces out. When 2 of 8 pieces are left on the board, students will be expected to write $1/4$ on the board. When some students write $2/8$, the teacher can start a discussion on equivalent fractions. EVALUATE: Student participation and use of art materials will be observed. Student understanding of math concepts will be evaluated by their accuracy in cutting the pieces and writing matching fractions.</p>
<p>Differentiation and planned universal supports: The arts integration instructional approach of this lesson is in itself a mode of differentiation. This is because this style of lesson planning and</p>

facilitating meets the learning style of a wide variety of students. This integrated lesson meets 7 of the 8 multiple intelligences; move it from the classroom to a spot outside in which students can be a part of nature (naturalist learners) and it will meet all 8. Being up and moving around the room gives lesson time to spatial and bodily-kinesthetic learners, small group and whole class collaboration meets the needs of interpersonal learners, independent work time is for intrapersonal learners, class discourse and teacher-student discussions work best for linguistic learners, and the math worksheets are directly helpful for logical learners. However, there are also additional universal supports embedded in the lesson. The lesson is scaffolded in that all concepts have been previously introduced before being elaborated in order to maximize student understanding. All directions are provided orally and written to meet the needs of struggling readers and ELL students. Visual supports are provided, tangibles are used to help students directly interact with a concept, and the teacher makes themselves available throughout the lesson to provide any student with additional assistance when necessary. The teacher is a participant in many parts of the lesson, not just a facilitator. This allows students someone to look for an example and ask for help if they are having difficulty. Additionally, the lesson can easily be adjusted to allow students work in groups or pairs to support one another and these groups can be formed by the teacher with specific needs in mind. Pair strong readers with those who struggle. Pair students who are behind grade level in math with those who are excelling.

One Language Function students will develop: Students will develop the language function of *explain*. In class discussion, students will *explain* how they can see and use fractions in art. The class will also discuss equivalent fractions.

Additional language demands and language supports: Students will also meet the language demand of *discourse*. To do so, students will participate in class discussions using the following vocabulary: partitioning, fractions, unit fractions, equivalent, equal, part, whole, and half.

Type of Student Assessments and what is being assessed:

- **Informal Assessment:** The teacher will informally assess students through observation of their level of participation and accuracy shown throughout the lesson.
- **Formal Assessment:** The teacher will formally assess students through collection of the materials. Understanding of the content standards will be shown through properly cut fractions.
- **Modifications to the Assessments:** For struggling readers, all directions should be read aloud to ensure that the validity of the assessments. The concepts being assessed need to be done so without relying on a student's literacy skills. Additionally, for some students a scaffolding process may be necessary. This may include providing a part of the fraction ($1/?$ Or $?/3$) This can be removed later in the unit.

Evaluation Criteria: Students will be evaluated based on the art and math standards. Student understanding of the art concepts will be evaluated through observation of creativity, use of materials, and participation. Student understanding of the math standards will be evaluated through observation of, their ability to cut the art into fractions and their written fractions on whiteboards. The class will be ready to move onto the next lesson if 85% of the student work meets the grade-level standards. Reteaching will still be necessary for some students to ensure that all students are ready for the next lesson.

Relevant theories and/or research best practices:

Understanding by Design (UbD)- scaffolded lesson planning prepares students for success. Students first learn the standards by watching the teacher demonstrate, then by working together with the teacher, and finally by working on their own. This is the “I do, we do, you do” approach.

Universal Design for Learning (UDL) - Arts Integration encompasses a method of instruction that allows all students to be involved in a way that works best for them.

Multiple Intelligences- Not all students learn the same. This theory establishes the many ways in which student learning varies. Arts integration allows the teacher to meet many of these learning styles within one lesson.

Inquiry-Based Learning- Arts integration allows students the opportunity deepen their learning through their own exploration of the content. The arts provide an engaging way to use the math concepts rather than being told them.

Grade Level: 3

Subject / Content area: Mathematics and Dance

Unit of Study: Number and Operations-Fractions

Lesson Title: Building an Understanding of Fractions through Dance (Day 3)

<p>Central Focus for the learning segment: Students will develop an understanding of fractions by forming equal groups, breaking objects into equal parts, and making connections to real-life fraction use, all through the use of the 5 major art disciplines.</p>
<p>Content Standard(s): MATH: NY-3.NF Number and Operations- Fractions 1. Understand a unit fraction, $1/b$, is the quantity formed by 1 part when a whole is partitioned into b equal parts. Understand a fraction a/b as the quantity formed by a parts of size $1/b$. 3. Explain equivalence of fractions and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size b. Recognize and generate equivalent fractions. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. DANCE: 3rd DA:Pr5.1.3 b. Utilize fundamental dance skills to coordinate with a partner or other dancers to safely change levels, directions, and pathway designs.</p>
<p>Learning Objectives associated with the content standards: Students will be able to represent a fraction by forming equal groups as they dance, to represent the equal parts of a fraction.</p>
<p>Instructional Resources and Materials to engage students in learning: large open space, music playlist and speaker, and personal white boards, markers, and erasers.</p>
<p>Instructional Strategies, Learning Tasks, and TimeLine that support diverse student needs. (Include what you and students will be doing.): ENGAGE (30 minutes): Students will participate in a dance activity in which they are a part of a whole. The teacher will play music while the students dance on their own. Then, the teacher will call out a fraction and the students will have to form groups and dance. For example, the teacher calls out “you are a 5th!” Students will then have to know this means they need to form a group of 5 to dance in. Students will be asked to move in different pathways, levels, and directions. For example, while students are dancing the teacher will say, dance in a zig-zag pathway, at a low level, backwards. ELABORATE (30 minutes): Facilitate a class discussion asking the students how they represented fractions through dance. Further student understanding of the math concept by asking groups of students to come to the front of the room and asking students to write the matching fractions on their personal white boards. For example, call up 6 students and pull aside two. Ask the students to write the fraction that represents the students. EVALUATE: Students will be informally assessed throughout the lesson based on their participation, accuracy, and creativity.</p>
<p>Differentiation and planned universal supports: The arts integration instructional approach of this lesson is in itself a mode of differentiation. This is because this style of lesson planning and facilitating meets the learning style of a wide variety of students. This integrated lesson meets 7 of the 8 multiple intelligences; move it from the classroom to a spot outside in which students can be a part of nature (naturalist learners) and it will meet all 8. Being up and moving around the room gives lesson time to spatial and bodily-kinesthetic learners, small group and whole class collaboration meets the needs of interpersonal learners, independent work time is for intrapersonal learners, class discourse and teacher-student discussions work best for linguistic learners, and the math worksheets</p>

are directly helpful for logical learners. However, there are also additional universal supports embedded in the lesson. The lesson is scaffolded in that all concepts have been previously introduced before being elaborated in order to maximize student understanding. All directions are provided orally and written to meet the needs of struggling readers and ELL students. Technology is used to provide visual supports, tangibles are used to help students directly interact with a concept, and the teacher makes themselves available throughout the lesson to provide any student with additional assistance when necessary. The teacher is a participant in many parts of the lesson, not just a facilitator. This allows students someone to look for an example and ask for help if they are having difficulty. Additionally, students work in groups to support one another and these groups can be formed by the teacher with specific needs in mind. Pair confident performers with those who need encouragement. Pair strong readers with those who struggle. Pair students who are behind grade level in math with those who are excelling.

One Language Function students will develop: Students will develop the language function of *explain*. In class discussion, students will *explain* how they used fractions in the dance activity.

Additional language demands and language supports: Students will also meet the language demand of *discourse*. To do so, students will participate in a class *discourse* and need to know the following vocabulary to partake in discussions successfully: partitioning, fractions, unit fractions, equal, part, whole, half, pathway, direction, and levels.

Type of Student Assessments and what is being assessed:

- **Informal Assessment:** The teacher will informally assess students through observation of their level of participation and accuracy shown throughout the lesson.
- **Formal Assessment:** The teacher will formally assess students through an exit ticket. This will be collected to evaluate student understanding of the content standards.
- **Modifications to the Assessments:** For struggling readers, the exit ticket should be read aloud to ensure that the validity of the assessment. The math concepts are being assessed and need to be done so without relying on a student's literacy skills. Additionally, for some students a scaffolding process may be necessary. This may include providing pre-written portions on the exit ticket that can be removed later in the unit.

Evaluation Criteria: Students will be evaluated based on the art and math standards. The class will be ready to move onto the next lesson if 85% of the student work meets the grade-level standards. Reteaching will still be necessary for some students to ensure that all students are ready for the next lesson.

Relevant theories and/or research best practices:

Understanding by Design (UbD)- scaffolded lesson planning prepares students for success. Students first learn the standards by watching the teacher demonstrate, then by working together with the teacher, and finally by working on their own. This is the "I do, we do, you do" approach.

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Inquiry-Based Learning- Arts integration allows students the opportunity deepen their learning through their own exploration of the content. The arts provide an engaging way to use the math concepts rather than being told them.

Grade Level: 3

Subject / Content area: Mathematics and Literacy

Unit of Study: Number and Operations-Fractions

Lesson Title: Building an Understanding of Fractions through Literary Arts (Day 4)

Central Focus for the learning segment: Students will develop an understanding of fractions by forming equal groups, breaking objects into equal parts, and making connections to real-life fraction use, all through the use of the 5 major art disciplines.

Content Standard(s):

MATH: NY-3.NF Number and Operations- Fractions

1. Understand a unit fraction, $1/b$, is the quantity formed by 1 part when a whole is partitioned into b equal parts. Understand a fraction a/b as the quantity formed by a parts of size $1/b$.

3. Explain equivalence of fractions and compare fractions by reasoning about their size. a.

Understand two fractions as equivalent (equal) if they are the same size b. Recognize and generate equivalent fractions. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.

LITERACY: 3W3: Write narratives to develop real or imagined experiences or events using effective techniques, descriptive details, and clear event sequences.

3W3a: Establish a situation and introduce a narrator and/or characters.

3W3b: Use descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations.

3W3c: Use temporal words and phrases to signal event order.

3W3d: Provide a conclusion.

Learning Objectives associated with the content standards: Students will be able to describe a real-life situation in which fractions are used by creating a short narrative and solving the problem created.

Instructional Resources and Materials to engage students in learning: Student writing journal & pencil, lesson 3 sprint- print out for each student.

Instructional Strategies, Learning Tasks, and TimeLine that support diverse student needs.

(Include what you and students will be doing.):

ENGAGE (5-10 minutes): Pass out the math sprint to each student to complete independently as a warm-up. Next, Students will write a flash fiction story that includes a group of characters in a scenario in which fractions would need to be used. Begin with class discourse in which you provide a few examples and encourage students to generate and share story ideas. You may choose to have students discuss in small groups or partners as well.

ELABORATE (40 minutes): Give students time to write their stories. Remind them to be creative, and use proper capitalization and punctuation. Walk around the room having quick discussions to check in with students and ask what they are writing about. Students will use the problem created in their story to complete the math problem. They will be instructed to write a math sentence to accompany the story. For example, if the student wrote a story about a birthday party and splitting cake between 4 friends, a math sentence might look like: A cake split between 4 friends means that each person gets $\frac{1}{4}$ of the cake. $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{4}{4}$ or 1 whole.

EVALUATE (5-10 minutes): Students will be formally assessed based on their grammar, use of proper punctuation, sentence and paragraph structure, creativity, story plot line, and inclusion of fractions and correct math sentence that demonstrates an understanding of how they are used in real-life scenarios. Students will be given the opportunity to share their story with the class.

Differentiation and planned universal supports: The arts integration instructional approach of this lesson is in itself a mode of differentiation. This is because this style of lesson planning and facilitating meets the learning style of a wide variety of students. This integrated lesson meets 7 of the 8 multiple intelligences; move it from the classroom to a spot outside in which students can be a part of nature (naturalist learners) and it will meet all 8. Being up and moving around the room gives lesson time to spatial and bodily-kinesthetic learners, small group and whole class collaboration meets the needs of interpersonal learners, independent work time is for intrapersonal learners, class discourse and teacher-student discussions work best for linguistic learners, and the math worksheets are directly helpful for logical learners. However, there are also additional universal supports embedded in the lesson. The lesson is scaffolded in that all concepts have been previously introduced before being elaborated in order to maximize student understanding. All directions are provided orally and written to meet the needs of struggling readers and ELL students. Technology is used to provide visual supports, tangibles are used to help students directly interact with a concept, and the teacher makes themselves available throughout the lesson to provide any student with additional assistance when necessary. The teacher is a participant in many parts of the lesson, not just a facilitator. This allows students someone to look for an example and ask for help if they are having difficulty. Additionally, students work in groups to support one another and these groups can be formed by the teacher with specific needs in mind. Pair strong readers with those who struggle. Pair students who are behind grade level in math with those who are excelling.

One Language Function students will develop: Students will develop the language function of *explain*. In class discussion and in writing a story, students will *explain* how they see and use fractions in real-life.

Additional language demands and language supports: Students will also meet the language demand of *discourse* by participating in a class discussion. Each student will also partake in *discourse* during their check in conversation with the teacher. In order to do so, students will need to know the following vocabulary: fraction, unit fraction, half, addition, plus, equal, sum, part, whole, flash fiction, characters, setting, plot, and main idea.

Type of Student Assessments and what is being assessed:

- **Informal Assessment:** The teacher will informally assess students through observation of their level of participation and accuracy shown throughout the lesson.
- **Formal Assessment:** The teacher will formally assess students through collection of their flash fiction story and corresponding fraction sentence. This will be collected to evaluate student understanding of the content standards.
- **Modifications to the Assessments:** For some students, a scaffolding process may be necessary. This may include providing a worksheet that is a story outline to ensure students write a beginning, middle and end. A list of story requirements can be written at the top and read aloud to students.

Evaluation Criteria: Students will be evaluated based on the art and math standards. The class will be ready to move onto the next lesson if 85% of the student work meets the grade-level standards. Reteaching will still be necessary for some students to ensure that all students are ready for the next lesson.

Relevant theories and/or research best practices:

Understanding by Design (UbD)- scaffolded lesson planning prepares students for success. Students first learn the standards by watching the teacher demonstrate, then by working together with the teacher, and finally by working on their own. This is the “I do, we do, you do” approach.

Universal Design for Learning (UDL) - Arts Integration encompasses a method of instruction that allows all students to be involved in a way that works best for them.

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Inquiry-Based Learning- Arts integration allows students the opportunity deepen their learning through their own exploration of the content. The arts provide an engaging way to use the math concepts rather than being told them.

Grade Level: 3

Subject / Content area: Mathematics and Theatre

Unit of Study: Number and Operations-Fractions

Lesson Title: Building an Understanding of Fractions through Theatre (Day 5)

Central Focus for the learning segment: Students will develop an understanding of fractions by forming equal groups, breaking objects into equal parts, and making connections to real-life fraction use, all through the use of the 5 major art disciplines.

Content Standard(s):

MATH: NY-3.NF Number and Operations- Fractions

1. Understand a unit fraction, $1/b$, is the quantity formed by 1 part when a whole is partitioned into b equal parts. Understand a fraction a/b as the quantity formed by a parts of size $1/b$.

3. Explain equivalence of fractions and compare fractions by reasoning about their size. a.

Understand two fractions as equivalent (equal) if they are the same size b. Recognize and generate equivalent fractions. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.

THEATRE: 3rd TH:Cr3.1.3

a. Collaborate with peers to revise, refine, and adapt ideas to fit given circumstances.

Learning Objectives associated with the content standards: Students will be able to identify a fraction by counting the how many parts of the whole fraction are present in a physical representation.

Instructional Resources and Materials to engage students in learning: Large open space, four printed real-life scenarios that require a knowledge of fractions, each with an accompanying exit ticket.

Instructional Strategies, Learning Tasks, and TimeLine that support diverse student needs.

(Include what you and students will be doing.):

ENGAGE (15 minutes): Students will participate in a game of “Ships and Sailors” that I have edited to combine theatre and math. When the teacher calls out each pose, the students will state the proper fraction. For example, “three men rowing” is called out and students form groups of 3, they will need to state “I am one third” because they represent $1/3$ of the group they are in. After the game is over, facilitate a short class discussion. Start the conversation by prompting students, “how did this game use fractions?” “what fractions did you need to know to play this game?” “how did you and the groups you formed represent fractions?”

ELABORATE (30 minutes): Form 4 groups of students. Give each group a short scenario to act out (see resources page). Give the groups time to create their short performance. Groups will perform, then complete an accompanying exit ticket.

EVALUATE (15 minutes): Students will be informally assessed based on participation and accuracy. Students will show understanding by forming correct groups, stating correct fractions, and acting out the correct characters with quality intonation and effort. Oral feedback will be provided throughout. The exit ticket and self-assessment question will be collected as a formal assessment and the teacher will provide written feedback to the students.

Differentiation and planned universal supports: The arts integration instructional approach of this lesson is in itself a mode of differentiation. This is because this style of lesson planning and facilitating meets the learning style of a wide variety of students. This integrated lesson meets 7 of the 8 multiple intelligences; move it from the classroom to a spot outside in which students can be a part of nature (naturalist learners) and it will meet all 8. Being up and moving around the room gives

lesson time to spatial and bodily-kinesthetic learners, small group and whole class collaboration meets the needs of interpersonal learners, independent work time is for intrapersonal learners, class discourse and teacher-student discussions work best for linguistic learners, and the math worksheets are directly helpful for logical learners. However, there are also additional universal supports embedded in the lesson. The lesson is scaffolded in that all concepts have been previously introduced before being elaborated in order to maximize student understanding. All directions are provided orally and written to meet the needs of struggling readers and ELL students. Technology is used to provide visual supports, tangibles are used to help students directly interact with a concept, and the teacher makes themselves available throughout the lesson to provide any student with additional assistance when necessary. The teacher is a participant in many parts of the lesson, not just a facilitator. This allows students someone to look for an example and ask for help if they are having difficulty. Additionally, students work in groups to support one another and these groups can be formed by the teacher with specific needs in mind. Pair confident performers with those who need encouragement. Pair strong readers with those who struggle. Pair students who are behind grade level in math with those who are excelling.

One Language Function students will develop: Students will develop the language function of *justify*. During the game, and in the post-discussion, of fractions ships and sailors, students will have to *justify* what fraction they represent by explaining the scenario and using their knowledge of fractions.

Additional language demands and language supports: Students will also meet the language demand of *discourse*. A class discussion will require students to know the following vocabulary: pose, prop, scene, partitioning, fractions, unit fractions, equal, group, part, whole, and half.

Type of Student Assessments and what is being assessed:

- **Informal Assessment:** The teacher will informally assess students through observation of their level of participation and accuracy shown throughout the lesson.
- **Formal Assessment:** The teacher will formally assess students through an exit ticket. This will be collected to evaluate student understanding of the content standards.
- **Modifications to the Assessments:** For struggling readers, the exit ticket should be read aloud to ensure that the validity of the assessment. The math concepts are being assessed and need to be done so without relying on a student's literacy skills. Additionally, for some students a scaffolding process may be necessary. This may include providing pre-written portions on the exit ticket that can be removed later in the unit.

Evaluation Criteria: Students will be evaluated based on the art and math standards. The class will be ready to move onto the next lesson if 85% of the student work meets the grade-level standards. Reteaching will still be necessary for some students to ensure that all students are ready for the next lesson.

Relevant theories and/or research best practices:

Understanding by Design (UbD)- scaffolded lesson planning prepares students for success. Students first learn the standards by watching the teacher demonstrate, then by working together with the teacher, and finally by working on their own. This is the "I do, we do, you do" approach.

Universal Design for Learning (UDL) - Arts Integration encompasses a method of instruction that allows all students to be involved in a way that works best for them.

Multiple Intelligences- Not all students learn the same. This theory establishes the many ways in which student learning varies. Arts integration allows the teacher to meet many of these learning styles within one lesson.

Inquiry-Based Learning- Arts integration allows students the opportunity deepen their learning through their own exploration of the content. The arts provide an engaging way to use the math concepts rather than being told them.



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Professional Development: Arts Integration

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Arts for Children and Education

Thesis Advisor: Christian Carson

What is arts integration?

- Method of content instruction.
- 50/50 - 2 Standards.
- Music, dance, visual art, theatre, literary arts.
- Used in the general education classroom. Common in charter schools.
- Meets multiple intelligences and learning styles. (Howard Gardner Theory)



At a Glance

- Arts integration → increased student interest → increased student effort → increased student performance → happy teachers, parents, students, districts, and states.



Why Do Educators Use Arts Integration?

- Student Engagement & Motivation
- Creativity, Expression, and Social-Emotional Health
- Content Absorption & Finding Deeper Meaning
- Student Acquired Knowledge & Connections
- Multiple Learning Styles
- Parent Friendly Instruction
- Inclusive



What is Arts Emphasis?

- You've seen it- ever heard this song?
<https://www.youtube.com/watch?v=GtYrorYu9OE>
- This is **arts emphasis** because it is used as a “hook” to help students take interest in the lesson. It is not **arts integration** because it does not teach an art standard and only fills a few minutes of the lesson. It is simply used as an introduction.



A Walk Through an Arts Integrated Lesson

This is a 5-day math lesson that teaches students about fractions. Each day is paired with a different art form. Each day uses both the math standard and the art standard. As the week progresses, the level of integration increases to show how teachers can develop their lesson plans.

Things to consider:

- Are these lessons teaching both standards?
- Do you think students are learning, having fun, or both?
- Are these lessons more engaging than traditional content lessons?
- Is the teacher lecturing the information to the students or are they building knowledge for themselves?
- How is the teacher keeping students on task?
- Possible challenges that you think could arise
 - Are these challenges for the teacher or student?
 - Why is it important if the challenge is for the teacher or student?



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Central Focus

- Students will develop an understanding of fractions by forming equal groups, breaking objects into equal parts, and making connections to real-life fraction use, all through the use of the 5 major art disciplines.



Prior Knowledge

****In order to create and cover 5 lesson plans in a short PD session, a certain amount of prior knowledge/skills must be assumed. Keep in mind this is for MOST students. Accommodations and modifications are still necessary for some students. When considering the facilitation of these lessons, please assume the following:****

Math- Students have begun the unit on fractions. They have developed skills in multiplication and division and have a basic understanding of the part/whole concept and equivalent fractions.

Music- Students have been introduced to the definitions of melody and rhythm. They have previously kept the rhythm to music using their hands on the floor.



Prior Knowledge continued..

Visual Art- Students have previously engaged with art materials and have discussed safety protocols.

Dance- Students have been introduced to the concepts of pathways, levels, and directions. They have previously brainstormed a list of different ways to move such as glide, slither, crawl, leap, skip, hop, etc.

Literary Arts- Students meet grade level reading and writing skills. They have been introduced to flash fiction previously.

Theatre- Students have experience working collaboratively and have participated in theatrical exercises. The game, “Ships and Sailors” has previously been played the traditional way in recess.



Content Standards- Grade 3

Math- NY-3.NF Number and Operations- Fractions

1. Understand a unit fraction, $1/b$, is the quantity formed by 1 part when a whole is partitioned into b equal parts. Understand a fraction a/b as the quantity formed by a parts of size $1/b$.
3. Explain equivalence of fractions and compare fractions by reasoning about their size.
 - a. Understand two fractions as equivalent (equal) if they are the same size
 - b. Recognize and generate equivalent fractions.
 - c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.



Content Standards Cont...

Literacy- 3W3: Write narratives to develop real or imagined experiences or events using effective techniques, descriptive details, and clear event sequences.

3W3a: Establish a situation and introduce a narrator and/or characters.

3W3b: Use descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations.

3W3c: Use temporal words and phrases to signal event order.

3W3d: Provide a conclusion.



Content Standards Cont...

Music- 3rd MU:Cr1.1.3 - a. Generate rhythmic and melodic ideas, and identify connection to specific purpose and/or context (such as personal and social).

Visual Art- 3rd VA:Cr2.1.3 - a. Create artwork using a variety of artistic processes and materials. 3rd VA:Cr2.2.3 - a. Demonstrate an understanding of the safe and proficient use of materials, tools, and equipment for a variety of artistic processes.

Dance- 3rd DA:Pr5.1.3 - b. Utilize fundamental dance skills to coordinate with a partner or other dancers to safely change levels, directions, and pathway designs.

Theatre- 3rd TH:Cr3.1.3- a. Collaborate with peers to revise, refine, and adapt ideas to fit given circumstances.



Learning Objectives

Day 1- Students will be able to understand the concept of fractions by engaging in a musical representation.

Day 2- Students will be able to break an object into equal parts to represent a given fraction by creating a visual representation using a variety of art supplies.

Day 3- Students will be able to represent a fraction by forming equal groups as they dance, to represent the equal parts of a fraction.

Day 4- Students will be able to describe a real-life situation in which fractions are used by creating a short narrative and solving the problem created.

Day 5- Students will be able to identify a fraction by counting the how many parts of the whole fraction are present in a physical representation.



Materials

<p>Day 1 - Music</p> <ul style="list-style-type: none">• Each student will need two pencils (preferably unsharpened for safety purposes)• Math worksheet and pencil	<p>Day 2 - Visual Art</p> <ul style="list-style-type: none">• Paper, construction paper, scissors, glue, crayons, colored pencils, markers, and printouts.• Each student will need a whiteboard and dry erase marker	<p>Day 3 - Dance</p> <ul style="list-style-type: none">• Large open space• Music and speaker• Personal white boards.	<p>Day 4 - Literary Art</p> <ul style="list-style-type: none">• Student writing journal & pencil.• Lesson 3 sprint- print out for each student.	<p>Day 5 - Theatre</p> <ul style="list-style-type: none">• Large open space• 4 printed real-life scenarios that require a knowledge of fractions, each with an accompanying exit ticket.
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Diverse Learners/ Differentiation

Arts integration as an instructional strategy already meets the needs of diverse learners by engaging the theory of multiple intelligences. However, teachers can further differentiate within this model of teaching.

In this lesson...

- Whole class, group, and individual work time
- Use of technology
- Teacher instruction and student inquiry
- Use of visual aids
- Use of hands-on activities
- Remediation and enrichment



Day 1- Music and Fractions

ENGAGE: Students will learn part of a song that will help deepen their understanding of fractions.

- While learning the song, students will learn about rhythm by keeping the beat. The students will do this using two pencils, unless wooden rhythm sticks are available to the class.

ELABORATE: The teacher will explain how music has a purpose. In this case, the purpose is to make connections with the math content and to collaborate with peers. Additionally, music has the purpose of bringing joy. Directly ask the students, “how does music make math more fun for you?”

- Students will complete a math problem set from the NYS curriculum after learning the song.

EVALUATE: Students will perform the song in groups, showing their ability to meet the music standards. Their art critique shown through the discussion will show their understanding of arts purpose in the lesson. Students will also complete a written exit ticket to demonstrate the math concepts that they learned.



Day 2- Visual Art and Fractions (Arts Emphasis)

ENGAGE: Students will have the option to use materials to create a drawing of a commonly divided object, or use materials to artistically develop the printout you provide. Start with a class discussion in which you encourage students to share ideas, starting by sharing the print-out options you will provide (pizza, chocolate bar, cake) This allows the option of creative freedom (with teacher approval) and provides a scaffolded option.

ELABORATE: The students will then be asked to cut their image into equal parts to match the fraction written on the board. The teacher will start with $\frac{1}{2}$ and the students will demonstrate their understanding by cutting their image into 2 equal parts. The class will repeat the process for $\frac{1}{4}$, and $\frac{1}{8}$. Next, students will be asked to use their personal white boards to write the fraction that matches the amount of pieces the teacher shows. The teacher will have their pizza on the board cut in pieces, and will take pieces out. When 2 of 8 pieces are left on the board, students will be expected to write $\frac{1}{4}$ on the board. When some students write $\frac{2}{8}$, the teacher can start a discussion on equivalent fractions.

EVALUATE: Student participation and use of art materials will be observed. Student understanding of math concepts will be evaluated by their accuracy in cutting the pieces and writing matching fractions.



Day 3- Dance and Fractions

ENGAGE: Students will participate in a dance activity in which they are a part of a whole. The teacher will play music while the students dance on their own. Then, the teacher will call out a fraction and the students will have to form groups and dance. For example, the teacher calls out “you are a 5th!” Students will then have to know this means they need to form a group of 5 to dance in. Students will be asked to move in different pathways, levels, and directions. For example, while students are dancing the teacher will say, dance in a zig-zag pathway, at a low level, backwards.

ELABORATE: Facilitate a class discussion asking the students how they represented fractions through dance. Further student understanding of the math concept by asking groups of students to come to the front of the room and asking students to write the matching fractions on their personal white boards. For example, call up 6 students and pull aside two. Ask the students to write the fraction that represents the students.

EVALUATE: Students will be informally assessed throughout the lesson based on their understanding of fractions, levels, and pathways, as well as participation, accuracy, and creativity.



Day 4- Literary Arts and Fractions

ENGAGE: Pass out the math sprint to each student to complete as a warm up. Next, Students will write a flash fiction story that includes a group of characters in a scenario in which fractions would need to be used. Begin with class discourse in which you provide a few examples and encourage students to generate and share story ideas.

ELABORATE: Students will use the problem created in their story to complete the math problem. They will be instructed to write a math sentence to accompany the story. For example, if the student wrote a story about a birthday party and splitting cake between 4 friends, a math sentence might look like: A cake split between 4 friends means that each person gets $\frac{1}{4}$ of the cake. $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{4}{4}$ or 1 whole.

EVALUATE: Students will be formally assessed based on their grammar, use of proper punctuation, sentence and paragraph structure, creativity, story plot line, and inclusion of fractions that demonstrates an understanding of how they are used in real-life scenarios. Students will be given the opportunity to share their story with the class.



Day 5- Theatre and Fractions

ENGAGE: Students will participate in a game of “Ships and Sailors” that I have edited to combine theatre and math. When the teacher call out each pose, the students will state the proper fraction. For example, “three men rowing” is called out and students form groups of 3, they will need to state “I am one third” because they represent $\frac{1}{3}$ of the group they are in.

ELABORATE: Form 4 groups of students. Give each group a short scenario to act out (see resources page). Give the groups time to create their short performance. Groups will perform, then complete an accompanying exit ticket.

EVALUATE: Students will be informally assessed based on participation and accuracy. Students will show understanding by forming correct groups, stating correct fractions, and acting out the correct characters with quality intonation and effort. Oral feedback will be provided throughout. The exit ticket and self-assessment question will be collected as a formal assessment and the teacher will provide written feedback to the students.



Informal and Formal Assessments

Formative

- Teacher observations, checking for student understanding.
- Collecting of materials.
- Class discourse.
- Student performance and participation.

Summative

- Math problem Set
- Exit tickets
 - Student self-assessment



Lesson Resources

Day 1- [Simple Fractions Song : Fractions of amounts: you sing maths - you sing and learn : Lesson Starter - Bing video](#) (or any other fraction song you find appropriate)

[EngageNY](#) (page 36-38 problem set and exit ticket)

Day 2- No additional resources needed.

Day 3- No additional resources needed.

Day 4- [EngageNY](#) (lesson 3 sprint)

Day 5- [How To Play SHIPS & SAILORS - Bing video](#)

<https://docs.google.com/document/d/1Y1IB1wemcrBQZ-gBROn7rDSTgFtj-T8-yLjWrM11bls/edit?usp=sharing>



Remediation & Enrichment

Day 1, Music- If you find it too difficult for the students to learn the song, have students keep the beat with rhythm sticks to the video. Instead of performing, go through the song a final time.

Day 2, Visual Art- A worksheet with fractions shown as images can be used to provide additional practice. Be sure to print this in black and white and ask students to color the images appropriately when finished.

Day 3, Dance- If you find that there is additional time, a problem set or exit ticket from the NYS curriculum can be added to the lesson.

Day 4, Literary Arts- This lesson could be extended from flash fiction to short story.

Day 5, Theatre- Extend the time to create performances, then allow students to perform and complete the exit ticket later in the day. Group students by academic ability and adjust scenarios to meet their needs. Simply math question for struggling learners and provide a more difficult problem for strong students.



Relevant Theories

- UbD- scaffolded lesson planning
- UDL- Arts Integration encompasses a method of instruction that allows all students to be involved in a way that works best for them.
- Multiple Intelligences- Not all students learn the same. This theory establishes the many ways in which student learning varies. Arts integration allows the teacher to meet many of these learning styles within one lesson.
- Inquiry-based learning- Arts integration allows students the opportunity deepen their learning through their own exploration of the content. The arts provide an engaging way to use the math concepts rather than being told them.



Takeaways

- Two sets of standards- but emphasis is still helpful.
- Increased student engagement and motivation to learn.
- Helps meet the learning styles and intelligences of more students.
- Allows students to express themselves, and leads to confidence and values social-emotional health.
- Planning is especially important, but once you begin integrating lessons, you will find yourself naturally adding art disciplines in regular lesson planning. Facilitating a new model of instruction is a process.



Tips

- Begin with arts emphasis and work your way into integration.
- Start by trying to meet 2-3 of the multiple intelligences per lesson.
- Use the “at a glance” NYS art standards to simplify lesson planning and writing objectives.
- Focus on your students- observe how they learn and take notes. Knowing your students helps you plan lessons that best meet their needs.
- Talk with other teachers to support each other through the process, join PLC’s, and attend professional developments to learn more.
- Art is fun! When necessary, utilize recess time for lesson extensions and pre-teaching/reteaching.



Things I Asked You to Consider

- Importance of teacher vs. student challenge - It is our job to meet all students needs, this is not always easy, but practice will make this process easier just as any other instructional method.
 - THINK- why do we use inquiry-based lessons in science? Isn't that more difficult to plan and administer than simply telling students facts to take down in their notes? Yes it is, but we have adopted it because it increases student engagement and success in the classroom. Like you have learned content standards, you will eventually find ease in attaching a correlating art standard.
- Classroom management and lesson challenges- Keeping students on task will be less difficult when they are actively engaged and enjoying their learning experience. Redirect when necessary.



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