When Geometry Meets Fashion: Integrating Arts/Design into the CCSS

Ding-ay Tadena
Teacher, Mathematics
Coordinator, Visual and Performing Arts (VAPA)
Hawthorne High School
@CVUHSD

Gwynn Alexander
Teacher, Visual Art
Hawthorne High School
@CVUHSD
Welcome!

When Geometry Meets Fashion: Integrating Arts/Design into the CCSS Workshop
JOIN THE CONVERSATION ON TWITTER

Use #LinkedLearning to talk about
Linked Learning

Use @Linked_Learning to talk about the
Linked Learning Alliance

Use #LLCON2017 to talk with others at the
convention
PRO TIPS FOR ATTENDEES

Using #LLCON2017

Live tweet the presentation and share quotes

Tweet top takeaways from your session

Tweet questions and share stats/data from your session

Tweet photos
When Geometry Meets Fashion: Integrating Arts/Fashion into CCSS
Agenda

• Introductions
• Contextualizing Learning
• Our Collaborative Process
• Examples of Student Work
• Lesson Demonstration
  – Geometry Cubism
Your Trainers:

Ding-ay Tadena
- Logical
- Analytical
- Mathematics
- Organized
- Precise

Gwynn Alexander
- Creative
- Visual
- Arts
- Free-flowing
- Curious
Our Academy Students:

Elective VAPA Elective Classes
- Theatre
- Dance
- Music
- Visual Arts

Math Classes
- Low self confidence
- Low engagement
- >25% are not on track to graduate (12th grade)
- >30% taking the math course as credit recovery

“I am an artist, I cannot be good at Math...”
We had two choices:

• We accept the their negative self-concepts and use them to justify failure. End of story.

• We change the way we teach and use their creative and artistic abilities to appreciate the math that we are teaching. The story continues...

We challenged ourselves and understand the idea on how we were raised believing that “right brained” or “left-brained” and experimented on activities to prove this otherwise.
What we did:

1. Collaborated to find content-crossovers
2. Started small and simple:
   • Picasso Geometry (Workshop Demonstration)
3. Improved our craft one step at a time; one artist at a time.
   • Construction with Kandinsky
4. Expanded our horizon
   • Origami Transformation
4. Fused all skills and gave total freedom in their creativity
   • Fashion and Geometry
I will be able to use my knowledge of the undefined terms in Geometry to divide my “plane” into different regions then use it as my canvass to create a piece that adapts Pablo Picasso’s art.
Picasso Geometry:

I will be able to use my knowledge of the undefined terms in Geometry to divide my “plane” into different regions then use it as my canvass to create a piece that adapts Pablo Picasso’s art.
Picasso Geometry:

I will be able to use my knowledge of the undefined terms in Geometry to divide my “plane” into different regions then use it as my canvass to create a piece that adapts Pablo Picasso’s art.
Picasso Geometry:

I will be able to use my knowledge of the undefined terms in Geometry to divide my “plane” into different regions then use it as my canvass to create a piece that adapts Pablo Picasso’s art.
Picasso Geometry:

I will be able to use my knowledge of the undefined terms in Geometry to divide my “plane” into different regions then use it as my canvass to create a piece that adapts Pablo Picasso’s art.
Construction with Kandinsky:

Using a compass and a straight edge, I will be able construct the different types of quadrilaterals to validate my prior knowledge through their definitions and create a Kandinsky inspired art piece.
Using a compass and a straight edge, I will be able construct the different types of quadrilaterals to validate my prior knowledge through their definitions and create a Kandinsky inspired art piece.
Using a compass and a straight edge, I will be able to construct the different types of quadrilaterals to validate my prior knowledge through their definitions and create a Kandinsky inspired art piece.
Using an index card and pencil, I will be able construct and prove the length of the longest side of an isosceles right triangle, look for numeric patterns and create my own artwork with it.
Using an index card and pencil, I will be able construct and prove the length of the longest side of an isosceles right triangle, look for numeric patterns and create my own artwork with it.
Using a compass and a straight edge, I will be able copy a segment, construct perpendicular bisector and angle bisectors and create a Kandinsky inspired design backpack.
Construction with Kandinsky:

Using a compass and a straight edge, I will be able copy a segment, construct perpendicular bisector and angle bisectors and create a Kandinsky inspired design backpack.
Fashion and Geometry:

Apply knowledge of Reflection and Symmetry to design an eyewear for Summer Collection.
Fashion and Geometry::

Apply knowledge of Reflection and Symmetry to design an eyewear for Summer Collection.
Fashion and Geometry:

Apply knowledge of Reflection and Symmetry to design an eyewear for Summer Collection.
Fashion and Geometry::

Use recyclable materials to design a functional outfit to reflect my knowledge of Geometry, use mathematics skills (precision, pattern, measurement, attention to details) and be able to collaboratively work with other students/teachers to produce a fashion show.
Use recyclable materials to design a functional outfit to reflect my knowledge of Geometry, use mathematics skills (precision, pattern, measurement, attention to details) and be able to collaboratively work with other students/teachers to produce a fashion show.
Use recyclable materials to design a functional outfit to reflect my knowledge of Geometry, use mathematics skills (precision, pattern, measurement, attention to details) and be able to collaboratively work with other students/teachers to produce a fashion show.
Use recyclable materials to design a functional outfit to reflect my knowledge of Geometry, use mathematics skills (precision, pattern, measurement, attention to details) and be able to collaboratively work with other students/teachers to produce a fashion show.
Use recyclable materials to design a functional outfit to reflect my knowledge of Geometry, use mathematics skills (precision, pattern, measurement, attention to details) and be able to collaboratively work with other students/teachers to produce a fashion show.
Use recyclable materials to design a functional outfit to reflect my knowledge of Geometry, use mathematics skills (precision, pattern, measurement, attention to details) and be able to collaboratively work with other students/teachers to produce a fashion show.
Fashion and Geometry::

Use recyclable materials to design a functional outfit to reflect my knowledge of Geometry, use mathematics skills (precision, pattern, measurement, attention to details) and be able to collaboratively work with other students/teachers to produce a fashion show.
Teaching to the Test:

“Superficial forms of assessment tend to lead to superficial forms of teaching and learning.”

-- Edutopia: Success Stories for Learning in the Digital Age
Teamwork Rubric

- Expectations of group members
- Participation of group members
- Level of involvement as team member
- Quality of work as team member
<table>
<thead>
<tr>
<th>Team Rubrics</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative</td>
<td>Will not help - ignores partner</td>
<td>Sometimes willing to help partner</td>
<td>Shares work when asked and listens to partner</td>
<td>Willingly explains things to partner and will use partner’s ideas</td>
</tr>
<tr>
<td>Creative</td>
<td>Never thinks of other ideas to solve a problem</td>
<td>Occasionally has a new idea, but little follow through</td>
<td>Has new ideas but will not share with others</td>
<td>Develops new ideas or ways of doing things. Products exceed requirements</td>
</tr>
<tr>
<td>On Task</td>
<td>Constantly talking to others in room, rarely works on task</td>
<td>Sometimes talks about unrelated subjects</td>
<td>Usually follows the tasks and talks only to partner</td>
<td>Always follows the steps of the task and sometimes goes beyond the concepts</td>
</tr>
<tr>
<td>Prepared</td>
<td>Never has supplies or willing to find proper place in task</td>
<td>Looks through to task to find place and sometimes borrows supplies</td>
<td>Uses daily wrap-up to find place in task</td>
<td>Arrives early for class and supplies are ready</td>
</tr>
<tr>
<td>Skillful</td>
<td>Makes no effort to learn new skills</td>
<td>Satisfied with answering questions, but no real understanding</td>
<td>Has general idea of task. Able to answer specific questions</td>
<td>Has clear idea of task and its relationship to technology and education</td>
</tr>
</tbody>
</table>
THE FOUR CORE COMPONENTS

LINKED LEARNING

- COMPREHENSIVE SUPPORT SERVICES
- WORK-BASED LEARNING
- CAREER TECHNICAL TRAINING
- RIGOROUS ACADEMICS

#LLCON2017
Higher Engagement

Rigorous Academics

Achievement
Picasso Geometry Workshop

**Geometry:** An example of how to use geometric patterns in fashion design

**Art:** An example of using geometrical shapes to design and cubist composition
Materials:

T-Shirt Template
Ruler
Crayons
Pencil
Geometry Lesson (Demonstration)

Learning Target:

I will be able to use my knowledge of the undefined terms in Geometry to divide my “plane” into different regions then use it as my canvass to create a piece that adapts Pablo Picasso’s art.
Cross – Curricular Arts Based Teaching

Picasso Geometry : Undefined Terms in Geometry

**CCSS.MATH.CONTENT.HSG.CO.D.12**

Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). *Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*
Math Key Terms:

- Point
- Line
- Segments
- Angles
- Plane
- Perpendicular Lines
- Intersecting Lines
- Acute Angles
- Obtuse Angles
- Parallel Lines
- Naming Angles
- Naming Segments
- Naming Lines
- Naming Points
Art Lesson (Demonstration)

Standard:

1.4 Analyze and describe how the composition of a work of art is affected by the use of particular principle of design (variety)

2.1 Solve a visual problem that involves the effective use of the elements of art and principles of design (shape)
Abstract Art:

- art that does not attempt to represent reality
- seeks to achieve the feeling of reality using shapes, forms, colors, and textures

Cubism:

- the earliest example of abstract art during the modern art period
- Perspective with a single viewpoint was abandoned and was replaced with use of simple geometric shapes
Picasso:

- Cubist period (early 20th century)
- Art should not copy nature
- A combination of observation and memory

Picasso (1910)
Girl with Mandolin
Reflective Writing:

• In a paragraph form:
  (use as many academic language you can in your explanation)
  – explain the different steps on how you created your master piece.
  – In a scale of 1-5, how would you evaluate the learning process (Arts and Geometry being integrated) and justify your rating.
  – What have you discovered about yourself during the process of this activity. Explain.
Thank you!