

Lesson Plan Title: Tessellate, tessellate, tessellate

Grade: 4

Time: Four 35-min periods

Teacher: Christine Huang

Date: November 16, 2014

Theme Concept

“Perfection” is a double-edged sword; it can be both good and bad in terms of human characteristics. As a perfectionist, one strives for the highest quality, and s/he never stops until that high quality is achieved. However, if not recognized, the downside is that high standard/quality is never reached. The perfectionist will continue to believe the high quality is not good enough and works even harder. Another downside may be that the perfectionist is unable to work with others who do not share the same characteristic because they will have different values in terms of quality. It is important to recognize that “perfection” is a positive characteristic if handled correctly. Having “perfection” allows one to go beyond the standard. “Perfection” creates discipline and hard workers. The key to maintaining a positive characteristic, however, is to know the limits and when is good, good enough.

Non-Art Discipline Concept

Movement is all around us, specifically, mathematical transformations. The three types of transformations are rotation, reflection, and translation. These three movements show up everywhere. For example, dancing, battlefield configuration, making photocopies, baking, cooking, etc. Understanding these terms is crucial to following directions especially in the examples mentioned. Without the understanding of the various movements, one will not be able to be successful in life.

Concepts in Art Disciplines

Art Production (Art Making):

- **Element/Principle of Design:** Shape – there are two types of shapes, organic and inorganic. Organic shapes are found in nature and do not have an intentional shape. Inorganic or geometric shapes have precise measurements and are found less in nature.
- **Technique/Process:** Translation, cut-outs, asymmetrical, analogous colors

Aesthetics:

- What is a tessellation?
- When is a tessellation considered a success?

Art Criticism: ““Flying Fish (No. 73)” 1949. Ink, watercolor.

- *Description*
 1. What do you see in this artwork?
 2. What colors are here?
 3. What kinds of shapes do you see?

- *Formal Analysis*
 1. How are the shapes arranged?
 2. How is color used?
 3. Is the artwork two-dimensional or three-dimensional?
 4. Did the artist produce the work from imagination or a model?

- *Interpretation*
 1. What is the meaning of this artwork?
 2. What is the subject of the artwork?

- *Judgment*
 1. Do you think this is a successful work of art? Explain.
 2. Are there any changes you would make to this artwork? If so, what?
 3. What feeling or emotions does this artwork express to you?

Art History

- Background on MC Escher.

Learning Objectives

Art Disciplines:

- Students will apply their understanding of the definition of tessellations by creating a tessellated pattern on a 9” x 12” paper, colored with colored pencils using analogous colors.
- Students will create a personal meaning to their tessellations by describing in 1-paragraph what their tessellation pattern represents and its importance.

Adaptations/Modifications for Students with Disabilities

Change the amount of time allowed for completing art activities. Encourage students to take breaks during art activities. Change mode of instruction. Adapt level of skill needed to complete art activities. Change the materials or adapt them to the needs of the student. Simplify the art making activities. Modify how special needs students can respond. Adapt the extent to which student engages in art activities; adapt to students’ strengths and interests. Change the goals of the art activities, but use the same materials. Provide visuals to further explain verbal and written instruction.

Non-Art Discipline:

- Students will demonstrate their understanding of the mathematical translation transformation by creating a one-direction tessellation.

Adaptations/Modifications for Students with Disabilities

Encourage students (particularly with ADHD) to find their own comfortable places within the classroom to make their artworks. Provide extra time. Remind students of behavioral expectations. Provide special needs students with clear and unobstructed view of demonstration.

Democratic Skills:

1. Students will use attentive and respectful listening skills when members of class/small groups are expressing ideas and feelings.
2. Students will reflect on their own thinking processes and behavior
3. Students will respectfully ask others about things they say if they didn't understand what was said or if they want someone to say more.
4. Students will help each other and collaborate ideas during the stimulation activity.
5. Students will authentically and meaningfully communicate others in the classroom while honoring one's own unique self and needs.
6. Students will listen to and respect the opinions of others even if they don't agree with them.

Democratic Skills Learning Modifications:

Give frequent positive feedback, particularly when special needs students are listening to others and being listened to by others. Allow students to complete art-learning tasks away from others when needed. Assign special needs students to routine classroom tasks, as well as tasks of responsibility for group learning needs, e.g. table leader who needs to distribute materials, conduct pre quiz reviews etc.

Sequence of Classroom Activities

1. Day 1: Students cut out tessellation shape and start tracing it on the 18" x 24" paper.
2. Day 2: Students will continue to trace and start coloring in their tessellations using colored pencils.
3. Day 3: Students will continue to color.
4. Day 4: Students will finish up their tessellations drawings.

Materials & Equipment

- 3" x 2.5" index cards
- Pencils

- 9" x 12" paper
- Colored pencils
- Sharpie
- Scissors
- Tape

Resources

- <http://www.mcescher.com/gallery/symmetry/no-73-flying-fish/>. November 16, 2014.
- <http://www.mcescher.com/gallery/symmetry/no-128-bird/>. November 16, 2014.
- https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=9&cad=rja&uact=8&ved=0CEQQFjAI&url=http%3A%2F%2Fwww.solonschools.org%2Faccounts%2FKMugano%2F9162009103643_TessellationProjectIntroduction.ppt&ei=D9JcVNX-MYaagwSA14PYDg&usg=AFQjCNE-yeisWGomyveKAbaEaN6bKt-FuA&bvm=bv.79184187,d.eXY. November 7, 2014.
- Tessellations. <http://www.coolmath4kids.com/tesspag1.html>. November 7, 2014.
- Geometry Playground. http://www.exploratorium.edu/geometryplayground/Activities/GP_Activities_6-8/ExploringTessellations_%206-8_v4.pdf. November 7, 2014.
- http://www.tripurple.org/wp-content/uploads/2014/04/Red_Brick_Wall.jpg. November 16, 2014.
- <http://www.hayneedle.com/product/spanishsycamorewalnutchessboard.cfm>. November 16, 2014.
- <http://www.mcescher.com/gallery/symmetry/no-38-dragonfly/>. November 16, 2014.
- Transformations. <http://www.mathsisfun.com/geometry/transformations.html>. November 16, 2014.
- M.C. Escher. <http://www.mcescher.com/gallery/>. November 16, 2014.

List of Art Works

- "Flying Fish (No. 73)" 1949. Ink, watercolor.
- "Bird (No. 128)" 1967. Ink, watercolor.
- "Dragonfly (No. 38)" 1941. Pencil, ink, watercolor.

Supporting Materials

- PowerPoint on MC Escher

Narrative of Classroom Procedures

I Want You To...

- Take several of the small rectangles to practice making your tessellation piece.

- Remember, it takes practice to get really good at something. So, keep on practicing. Don't give up.
- Think about the importance of your tessellation piece. How does it represent an aspect of your life?
- Line up the cut out piece with the original piece by using the lines on the index card.
- Make sure you do draw an intricate design because then it would be hard to cut out and have to trace again and again.
- Make sure you do not overlap or leave any gaps as you tape the pieces together.

More Questions, Statements, Positive Verbal Reinforcements, Suggestions, and Clarifications of Tasks

- Think carefully as you make your design.
- As you trace, make sure you do not overlap or leave any gaps.
- This technique is similar to a jigsaw puzzle.

Lesson Extensions/Connections

- Talk about the reversal tessellation. Have students experiment with make a two-direction tessellation pattern.

NJCCS:

- **One Visual Arts Standard and Indicator: Visual and Performing Arts. 1.4 Aesthetic Responses & Critique Methodologies.** All students will demonstrate and apply an understanding of arts philosophies, judgment, and analysis to works of art in dance, music, theatre, and visual art. **A. Aesthetic Responses. 5.** Formalism in dance, music, theatre, and visual art varies according to personal, cultural, and historical contexts. **1.4.5.A.2.** Make informed aesthetic responses to artworks based on structural arrangement and personal, cultural, and historical points of view.
- **One Mathematics Standard and Indicator:** Grade 4. Geometry. CCSS.Math. Content.4G.A.3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

Anticipated Misconceptions that May Occur

- Students will not all be able to tape the pieces in the correct position.
- Students will not translate (slide) all the time.

Teacher's Evaluation

Lesson Plan:

1. Are the activities in the lesson age-appropriate?
2. Are the activities in the lesson appropriate for all learners including students with disabilities and English Language Learners?
3. Are there any parts of the lesson that require too much time/too many features that don't allow enough time for adequate understanding?
4. Did all parts of the lesson engage and maintain students' interest?
5. Does the lesson conceptually link art with another subject in an integrated way that is both implicit and explicit?
6. Are the learning activities presented in the best sequence for maximizing student understanding and participation?

Teaching of Lesson:

1. Did I allow enough wait-time?
2. Did I make eye contact with students?
3. Was I excited about the lesson?
4. Did I ask enough open-ended questions?
5. Did I allow students to ask open-ended questions?
6. Did I speak clearly and loudly enough for students to hear me?
7. Did I hold students accountable and check for acquisition of knowledge?
8. Did build on students' prior understanding/knowledge
9. What is one aspect I can improve for the next time I teach this lesson?

Student Outcomes:

1. Were students able to work collaboratively and respectfully during art making, aesthetics, criticism and conclusion?
2. Were students able to try their best without giving up?
3. Were students able to hand in their work on time?
4. Were students able to verbalize form and aesthetically pleasing forms?
5. Did students think about the definition of "tessellation"?
6. Were students able to carefully cut out their shapes?
7. Did students write a description about their tessellation?
8. Did students clean up their workspace?
9. Were students able to trace their tessellation piece so the pattern filled the whole paper?

Outcomes for students with learning disabilities:

1. Did students feel successful?
2. Did students accept and build upon positive feedback?
3. Were students engaged and giving optimal effort during activities?

Learners' Characteristics

During the Post-Schematic stage (ages 9-12), also known as the Dawning-Realism stage, students are beginning to become aware that they are part of society, whether that is among their peers, schools, neighborhoods, etc. Children at this stage of Lowenfeld's artistic development are especially interested in their places among their peers.

Students with Learning Disabilities Characteristics

ADD and ADHD: Students with ADD and/or ADHD may be inattentive, hyperactive and/or impulsive. Students might exhibit the following: fails to pay close attention to details, makes careless mistakes, can't sustain focused attention, doesn't appear to be listening, has difficulty organizing tasks, activities, materials, doesn't like activities that require sustained focus, easily distracted by extraneous environmental activity, often forgets routine activities, fidgets, moves hands and feet, moves round in seat, can't stay still, gets out of seat often, runs in classroom, hall climbs, has difficulty engaging in quiet activities, even quiet leisure activities, talks excessively, blurts out answers to questions, sometimes even before questions are completed, has difficulty waiting, taking turns, interrupts teacher and others frequently.

Autism: Students with Autism have a lifelong developmental disability that affects their verbal communication, nonverbal communication, and social interactions. Students might exhibit the following: repetitive activities and movements, resistance to changes in environment and daily routine, unusual responses to sensory experiences, poor play skills, frequent conflicts with others, lack of empathy and inability to see perspective of others, inability to tolerate overly stimulating environments, lights, sounds, and movements.

Behavioral, Emotional and Social: Students with Behavioral challenges can be aggressive and anti-social. Behavioral challenges may stem from a wide range of issues,-- gangs, drug use, homelessness, familial abuse, medication, and health problems. Students with Emotional challenges can feel sad, depressed and have low self-esteem. Students with Social challenges have difficulty interacting with others, making and keeping friends and dealing with everyday demands of social activities. Students with Behavioral, Emotional and Social learning disabilities might exhibit the following: inability to learn that can't be directly linked to health, sensory environmental or cognitive intelligence, inability to establish and maintain good interpersonal relationships with peers and teachers, voicing of inappropriate feelings or exhibiting inappropriate behaviors under normal classroom conditions, almost constant unhappiness or moody or depression-like behavior, passive- aggressive behavior, responds with trepidation and fear to ordinary classroom activities.

Down Syndrome: Students with Down syndrome usually learn and progress slower than most other children. However, not all areas of development are equally affected. Students with Down syndrome are strong in Social development, learning with visual supports, and reading

words. Socially they develop roughly at the same time as babies without Down syndrome. In adult life they continue to acquire good social skills and appropriate social behavior. Students with Down syndrome learn better when they can see things illustrated. This spans across and includes the acquisition of language, motor skills and literacy. When information is presented with the support of pictures, gestures or objects, students with retain better. Many students with Down syndrome develop reading abilities in advance of what might be expected for their cognitive and language levels. Reading is a particular benefit, given their specific speech and language delays. Challenges include slow motor development, poor oral motor control which impacts language skills, delays in spoken language and use of expressive language, delay in mastering sentence structures and grammar, and difficulty in developing clear speech production, number skills (2 years behind reading skills), Verbal short-term memory, the ability to hold and process verbal information, and processing spoken language.