

Stained Glass in the School Art Curriculum

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If you have ever walked by a school and glanced up at the classroom windows, you may have seen the backside of a children's stained glass project. The project is to make a small 'rose window' by cutting a sheet of black construction paper into a circle, folding it in quarters or eights, cutting out holes and filling the holes with colored tissue paper. Many elementary school art textbooks have a version of it. As an art teacher and an art historian whose specialty is medieval stained glass, I have always avoided the lesson, feeling that it rarely rises above the level of a "make and take," and that it gives stained glass and the Middle Ages a bad name.

Last year my school district bought a new elementary school art curriculum, *Adventures in Art*, ed. Laura Chapman (Worcester MA: Davis, 1998).¹ I began looking through it, searching for lessons in which I might be able to do something with medieval art, and realized that the curriculum includes seven stained glass lessons, distributed on each grade level. All have follow the process of the black construction paper tracery template, with coloring systems that range from tissue paper to acrylic paint on clear plastic.

Now, *Adventures in Art* has over sixty art lessons in each grade level and one lesson a year on stained glass is not a lot, but it's more than most curriculum publishers devote to glass or to the Middle Ages. I did an informal sampling of other curricula that we have in our department library: *Discover Art* (an older curriculum edited by Chapman and published by Davis in 1985), *Art in Action*, Guy Hubbard et al. (San Diego: Coronado, 1987), and two recent series, *SRA Art Connections* and Barrett Kendall's *Portfolios*.² These other curricula include one medieval glass lesson at most: the tissue paper rose window in versions that vary only slightly.

For a medievalist who is looking for opportunities to teach younger students about the Middle Ages, all the texts are a reality check. All offer an extremely simple view of the period—the two Davis curricula present what can only be called fractured history like the exam bloopers that teachers love to collect and publish. The sixth grade rose window lesson of both versions of the Davis curriculum juxtaposes a reference to the destruction

¹ The Davis Publications website, www.davis-art.com, has detailed information about this textbook series and online technical support.

² The two recently-published series, Rosalind Ragans et al. *Art Connections*, (SRA McGraw-Hill, 1998), and Robyn M. Turner et al., *State of the Art Program: Portfolios*, (Austin, Barrett Kendall, 1998), are featured on the websites of their respective publishers: <http://www.sra4kids.com/teacher/finearts/index.html> and <http://www.barrettkendall.com>.

of the Roman Empire to the October calendar page of the fifteenth century *Tres Riches Heures* that depicts peasants planting a field across the Seine from the Louvre. “During this period there were many wars,” the 1998 text informs us. “...Wealthy people built castles with moats to protect themselves and their servants.” On the next page, the west and north rose windows of Chartres cathedral are captioned “Cathedral of Amiens, begun about 1220.”³

According to the objectives in the teachers guides, in the lower grades students are simply to “be aware” of stained glass as an art form. The concept of historical stained glass is broached in fourth and fifth grades and culminates in the sixth grade rose window lesson, titled “Life in the Past: Medieval Towns.” There is little interest in presenting the historical development of art in any of the levels; rather, lessons are grouped thematically: a unit on the elements of art (line, shape, color, etc), a unit on expressing ideas through art, and according to grade level, units on craft or on the social functions of art, etc. The curriculum consistently avoids Eurocentrism, and while it includes many projects that would be ideal lessons in medieval manuscripts, heraldry, mosaic or metalwork, illustrations are generally chosen from alternate geographic and cultural sources. The development of any kind of sustained unit on medieval art would be left to the interest and initiative of the individual teacher.

Errors and limitations notwithstanding, I have actually come to like *Adventures in Art*. I wish that Davis had hired someone with an understanding of the Middle Ages and stained glass to help edit and choose illustrations that might have helped to pull the lessons into focus a bit more, but working with the curriculum has taught me a great deal about teaching the Middle Ages, and art history in general, to younger children. For the teacher who wants to introduce an elementary school class to the Middle Ages through art, it is important to remember that there is a difference between teaching the Middle Ages through art and teaching art through the Middle Ages. Often the first can only be achieved by doing the second. In the lower grade levels it is enough that students experiment with the medium of transparent color and learn that stained glass is an art form. Later, when their interest and motivation is aroused, they can begin to develop a more discerning appreciation of history.

Since adopting *Adventures in Art*, we in the Palo Alto elementary school art program have been trying out the lessons, refining and combining them to beef them up, writing lesson plans and training each other as we go. For obvious reasons, I gravitated to the stained glass lessons and have tried them in various forms in both fourth and fifth grade classes. My opinion is that the best of the lessons is the fourth grade rose window lesson, which is a simplified version of this old warhorse of a project. In fourth grade it is better as a math tie-in, since fourth graders learn geometry and the use of the compass and protractor in math and the rose lesson is an excellent exercise in radial symmetry.

I made two major adjustments to the curriculum’s version of the lesson. First, *Adventures in Art* has students simply fold a piece of black construction paper in quarters and cut a round template. However, fourth graders are fully capable of folding in eighths,

³ *Adventures in Art*, Level 6, pp. 82-83.

which is the level six rose lesson, and they can cut surprisingly intricate and original designs. The trick is to use black fadeless art paper instead of construction paper. Fadeless is thinner and it can be folded and cut more precisely.

Second, I substituted transparent cellophane for tissue paper. It can be built up in layers, permitting color blending, so the lesson can also satisfy the fourth grade art standard for color. It's more like medieval pot metal glass and even recreates a Chartres-like effect of luminous blue in late afternoon.

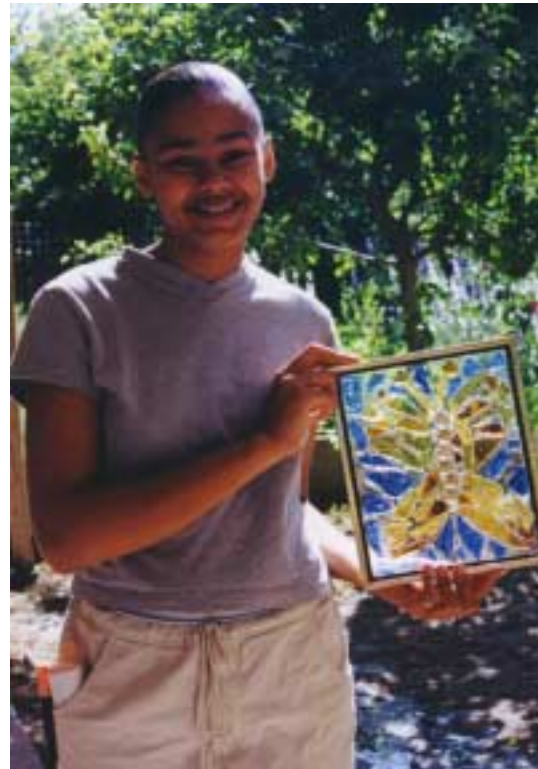
Having done the lesson with more than a hundred students, I must concede that I was wrong about the rose window lesson. It's enjoyable to teach, and it's also a clean lesson that can easily be managed in a multisubject classroom by a teacher who is not an art specialist. Best of all, the students love doing it, and it virtually guarantees a good product for every student.



However, there is no substitute for doing real stained glass. A couple of years ago I did a glass workshop for an art camp in Palo Alto that had a medieval theme.⁴ Lead is toxic, so medieval craft methods were out. I wanted a project that was both safe and artistically valid, and eventually worked out a combination of lamination and grout to produce a see-

⁴ "Castles, Cathedrals and Cloisters," Palo Alto Parents and Professionals for Art (PAPPA) Art Camp, ALS Jewish Community Center, Palo Alto CA, June 21-25, 1999.

through mosaic, somewhat like the windows of the twentieth century French artist Gabriel Loire. Subsequently I found similar projects in kit form published in craft magazines, and came upon a posting with a brief description of a lesson identical to mine in the Getty's ArtsEdNet Talk.⁵ I've done the lesson with students as young as first grade, eliminating glass cutting, and with students as old as tenth. To my mind, middle school is the optimum. Be advised that the materials for this lesson are not cheap, and it's a messy lesson that presupposes a small class and a working space that will tolerate black sandy grout dropping on the floor. If you can solve these problems, plus any liability issues resulting from glass cuts, the results are spectacular.



As an historian and art teacher with a scholar's interest in both medieval and modern windows, I believe that there are two strong reasons why stained glass should be in the school art curriculum. First, stained glass is the art of colored light. The kind of problem it presents to the student art-maker induces a very different way of seeing than the markers, crayons and poster paints that are the usual classroom art experience. Second, whereas most students think of art as a vehicle for personal creative expression, stained glass, indeed most medieval art, is a collaborative art. Medieval windows reflect social values and identity. Studying them is an effective way of challenging and expanding students' understanding of the diverse forms and functions of human artistic endeavor.

⁵ "re: stained glass" Virginia Rockwood (Mon Apr 02 2001 - 15:07:24 PDT), in the April 2001 Archive, ArtsEdNet Talk, <http://www.artsednet.getty.edu/ArtsEdNet/Talk/index.html>.

Lesson Plans

I. ROSE WINDOWS: WORKING WITH COLOR AND LIGHT

Recommended grade Level: 4th
Time commitment: 2 one-hour sessions

Objectives:

Students will understand the principles of radial symmetry

Students will blend transparent hues and will create a design that achieves radial balance

Overview

Stained glass is an art of colored light. The aesthetic experience of a stained glass window is very different from the more common experience of viewing a painting that has been executed in an opaque medium such as oil, acrylic or watercolor. Though working with actual glass may be impractical in a school setting, some of the essential principles of transparent color may be explored using other media such as transparent paint or cellophane. In the following lesson, students learn about medieval stained glass windows and construct a small rose window. The rose window lesson is a well-known activity, though generally made with black construction paper and colored tissue. Better results and a more meaningful lesson can be achieved with the following modifications and enhancements:

- Extend the lesson through inter-curriculum extensions. A social studies unit on the Middle Ages is an obvious choice, but an excellent connection may also be made to fourth grade mathematics, when students study geometry. If the lesson is done when students have been introduced to compasses and protractors it is an excellent way to reinforce awareness of shape, angle, and symmetry.
- Use well-chosen illustrations of medieval stained glass, particularly rose windows, to introduce the students to historic windows and to stimulate their creativity.
- Use black fadeless art paper and colored cellophane instead. Fadeless can be folded and cut more precisely and intricately than construction paper, while colored cellophane will permit the students to explore color blending in translucent materials.
- To explore the possibilities of shape and color without rushing the students, break the lesson down into two class periods, the first class for discussing shape and cutting the black paper templates, and the second for applying color. In the interim, hang the uncolored templates in the classroom windows. They are almost as interesting as the finished roses.

Resources:

The students may already know David Maccaulay's *Cathedral* (NY: Houghton Mifflin, 1981). Another popular book with many illustrations of rose windows is Painton Cowen, *Rose Windows* (SF: Chronicle, 1979). An online search for "stained glass" or even "medieval stained glass" will produce too many craft studios, though Lycos has a subcategory of historic stained glass. Searching "gothic architecture" through Dogpile is more useful, yielding for instance Education Planet, www.educationplanet.com, a k-12 teacher's resource through which one can Jeffrey Howe's site at Boston University with an excellent slide show of the windows of Chartres, Bourges and the Sainte-Chapelle. Other resources are the Stained Glass Association of America, www.stainedglass.org, the British Society of Master Glasspainters, <http://www.bsmgp.org.uk>, the Ely Stained Glass Museum, <http://www.sgm.abelgratis.com>, and the Centre International du Vitrail, <http://www.centre-vitrail.org>. Finally, a color wheel that shows the primary and secondary colors as well as tints and tones will be needed for the color lesson.

Vocabulary

stained glass, rose window, tracery, Middle Ages, diameter, circumference, radius, symmetry, axial or bilateral symmetry, radial symmetry, dynamic symmetry, asymmetry

Materials:

- black fadeless art paper cut in 12” squares
- 9 or 11” paper plates for tracing templates
- laminator tailings cut in pieces large enough for backing the cut paper templates (a backing of laminator plastic will provide support for the tracery cutout)
- colored cellophane, especially red and blue for a medieval look
- scissors, glue stick

I. Introduction to the lesson; cutting the black paper tracery template

The introductory discussion should focus briefly on stained glass as a craft process and an art form, and then move in to focus on rose windows. The two important features of rose windows are 1) their radial balance, and 2) the geometry that the medieval artists incorporated into the window tracery. Show an illustration of a rose window, rotating it by increments so that the students understand its radial balance. Observe how medieval rose windows may be designed with eight, twelve or twenty-four radii, and may have designs that balance alternate radii in multiples of four and six. Study the different shapes that one can find in the tracery of medieval rose windows: trefoils, quatrefoils, diamonds, circles, wheel spokes, flower petals, etc. Discuss the difference between these designs and paper snowflake cutouts. It is important for the students to understand that in a stained glass design none of the circumference will be cut away and the holes will be larger than in snowflake cutting. Here too, however, it is important not to cut away all of the folds.

In the early phases of the project everyone should work together, step by step. Have enough fadeless paper on hand so that a student who makes an irreparable mistake can begin again and catch up. Begin as follows:

- 1) Place the black fadeless paper on the desk with its white side up. Set the paper plate on it, trace it, and cut a circle from the black paper. Tracing from a paper plate is not the only way to cut a circular template, but it is simple and will produce a strong, rounded shape that will enhance the final product. Set the scraps aside but don't discard them yet. Many students will want to use them to add features to their design or to make mini windows.
- 2) Fold the cut paper circle in half, white side out. Check the students' folds for precision.
- 3) Fold again in quarters. While you are doing this, discuss geometry and the concepts of radius and diameter. Use protractors to measure the angles.
- 4) Fold again in eighths (figure 1), but note the following: To avoid having a thick nest of folds, which will result in the outside creases having bigger cuts than those on the inside, hold the wedge of paper so that the quartering fold is up. Fold each wing on the outside (in origami terminology, make a valley fold on each side of the mountain fold). If everyone does this correctly they will have a paper airplane that looks like the space shuttle. Check the precision of everyone's folds.

- 5) Cut tracery shapes (figure 2). Make the first cut, the center of the rose, as a class. Unfold the paper to check the shape of the cut. Refold and refine if desired. Cut out shapes along the two radial folds, but be sure to leave enough of the fold to hold the rose together.
- 6) Unfold and flatten. Sign the back (white) side of the template.
- 7) Glue it to the laminator backing and trim the excess.
- 8) Mount the tracery patterns in the classroom windows as students complete them. Discuss and analyze. How many students made designs in which all eight radii are similar? How many made designs in which the patterns alternate? Do both solutions demonstrate radial symmetry? Ask if anyone was worried about smearing glue on the front of his/her design. Show that when the lights are out and the designs are backlit, imperfections don't show.
- 9) Leave the designs up so that the students can become familiar with their patterns in black and white until the next class, when color will be added.

II. The Color Lesson

- 1) Review radial symmetry and principles of radial balance.
- 2) Discuss primary and secondary color and blending in color families. What color family lies between red and blue?
- 3) Holding pieces of cellophane up to the window, demonstrate the variety of reds, blues and purples that can be achieved with two or more layers of cellophane. What kind of blue do we get with two layers? What kind of red with three layers? What kind of purple with two layers of blue and one of red? Two layers of red and one of blue?
- 4) Place the tracery template black side down on the desk, laminate backing up, and glue the cellophane to the backside (figures 3, r). Make certain that the students understand this before beginning to glue. You may have to explain that the cellophane can be cut larger than the tracery light, and to show how to cut duplicate shapes by folding the cellophane in thickness of eight. Also, show how interesting color effects can be achieved by building up layers of color and by gluing chips of cellophane so that there are multiple colors in each tracery light. Hold the rose up to the light to check your progress and don't try to finish too quickly. Keep exploring possibilities.
- 5) Finally, when you're sure the students understand the principles of radial symmetry, let them break the rules. The designs are far more interesting that way.
- 6) Finish by running the roses through the laminating machine.

II. USING REAL STAINED GLASS: LAMINATED MOSAIC METHOD

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Recommended grade Level: middle school

Time commitment: 3 or more one-hour sessions (note: optimum schedule includes a break between days 2 and 3 to let glue cure)

Objectives:

Students will understand traditional and modern stained glass processes

Students will experiment with color and form to design and execute a small panel

Overview:

This lesson is appropriate for after-school or camp workshops with smaller class sizes. Safety goggles should be required for all children cutting glass, and work gloves should at least be available should children wish hand protection. The lesson does entail working with glass, however, and the possibility of a finger cut cannot be eliminated. Make certain that parents understand and agree to accept minor risks.

Resources:

Vincent O'Brien, *Techniques of Stained Glass: Leaded, Faceted & Laminated Glass* (1977; ed. NY: Prentiss Hall, 1986)

Books and illustrations of medieval stained glass: Sarah Brown, *Stained Glass: an Illustrated History* (NY: Crescent, 1992) is especially recommended as a general survey.

Vocabulary:

Stained glass, laminate, plating, grout, etc.

Equipment:

Safety goggles, work gloves for hand protection during glass cutting, glasscutters and grozing irons, band-aids, glass cleaner, latex gloves for grouting

Materials:

- Picture or photograph frames with glass (8 x 10 or desired size; costs can be cut by finding these in a resale store or requiring students to bring their own)
- Scraps of stained glass, flat colored marbles or glass beads (available at craft store), smalti or any transparent glass. Cobalt blue for a medieval look may be made by breaking up Harvey's Bristol Crème Sherry or Arizona Iced Tea bottles and smoothing their sharp edges in a ceramics kiln at cone 015 (make sure to kiln wash the shelf so the glass doesn't stick!)
- Clear glue (Goop or other such adhesive; latex caulk works but remains cloudy for a long time between layers of glass)
- Black sanded polygrout (available at Home Depot or through a tile or mosaic supplier)

Making the Panel:

1. Show examples of medieval glass. Have the students draw a basic design that can be put behind their picture frame to guide them. This will take a bit of persuasion, since some of them will want designs that don't translate well into glass. Simple, understandable and non-naturalistic color is best.
2. Remove the cardboard from behind the glass of the picture frame. Clean the glass on both sides, wipe well, and set the frame down over the preparatory drawing.

3. If the students are old enough—i.e., 5th grade or above, demonstrate cutting glass (for younger students, give them small precut chips that have been smoothed in the kiln)
4. [Cut and] position the glass on the frames without gluing. Make certain they're cutting small. **MAKE CERTAIN THAT ANYONE NEAR A CUTTING STATION IS WEARING SAFETY GOGGLES.** They tend not to mind cut fingers. Mosaic designs with many small pieces building up color areas look best. The adhesive shrinks as it cures, so that large glass pieces collect unsightly bubbles and wormholes underneath.
5. Glue glass chips in place. Watch to make certain that there are no huge gaps (1/4" between chips is okay) and that no pieces of glass get pushed under the edges of the picture frame.
6. Keep the flat marbles in your pocket and offer a few as accents (don't give students unrestricted access to these: they're design-killers and the kids will use them indiscriminately).
7. Give the adhesive a day or as much time as you can to cure, then grout. Follow the directions on the polygrout package. You may mix the grout with acrylic additive for extra bonding strength. Show the students how to wipe gently so the sand in the grout doesn't scratch the glass. Also show them how to keep wiping until the surface of the glass is truly clean. Wipe the picture frame and the backing glass too.
8. Have them hold their panels up against the light and observe how the physical details of the surface disappear in colored light when the panels are backlit. This is the important final step in aesthetic valuation—the students may not think to do this unless you show them, but they will immediately comprehend the nature of the transparent medium when they see it.

