

BUGS, BEADS AND BASKETS

African Beadwork and Mathematical Precision

ART AND MATH
GRADES: 4,5,6

BASED ON

Beaded Sheath (Ewu Orisha Oko), Early 20th Century
Leather, cotton cloth, glass beads
Gift of the Edwards-Brit Collection, 1982.234

OBJECTIVE

- The student will examine beaded examples of bugs, bracelets and baskets using at least five "math" words to describe them accurately. (HS math texts have great glossaries-grat exercise for the math geek.)
- The student will solve the sculptural problem of decoration sections of a bracelet in the style of the Massi of Kenya by accurately counting and stringing glass beads to form symmetrical, geometric and/or symbolic designs.
- To do this students will use graph paper to plan the number and sequence of various traditional colors and shapes. (Pre-K can string pony beads after putting them in a row - same on both sides of center.)
- Students will compare the mathematical concepts of accuracy and precision.

CONCEPT

After reviewing a list of math terms students will be given points for accurately using them to describe various beaded artifacts. Each student should pay close attention to aspects of the designs that they would like to incorporate into one of their own. The student will use accurate counting methods to design and construct a precise bracelet applying the plan.

VOCABULARY

Accuracy (correctness in application)
Precision (exactness in every detail)
Geometric
Symmetrical/asymmetrical balance
Symbolic
Alternating pattern
Parallel pattern
Sets
Tribal colors/patterns

MATERIALS/PROCEDURE

Graph paper
Colored pencils
Sharpener

Wire

Foam (spacing barriers)

Glass beads of various colors

Wire tools

1. Students will be given a list of terms from a math glossary and told that they would be given points in a math game format, for each word they could apply accurately in describing a group of art beaded artifacts.
2. The teacher will demonstrate various wire jewelry techniques including hook and loop clasps, being very careful not to crimp or otherwise weaken the structure of the wire.
3. The student will be given graph paper and various color-pencils with instructions to prepare a plan for their own beaded bracelet in the style of the Massai example.
4. Materials will be distributed and rules for organizational efficiency and harmony discussed.
5. Students will apply their plans precisely or note any divergent creations by revising their plans.
6. All materials will be resealed and stored properly for future use.
7. Finally, the class will pair up and critique each other's project with honor and respect for all the hard work, to help check each other's blind spots before the projects are submitted for evaluation.

ASSESSMENT

The student who completes all the list below with distinction = A

The student who completes all of the list below successfully = B

The student who completes most of the assignments successfully = C

The student who does not complete most of the assignments below successfully=Incomplete

1. Demonstrate the ability to describe Africa Beaded Artifacts accurately using at least 5 math terms.
2. Describe the construction of a plan to assemble a beaded bracelet using techniques and design aspects of the Massai of Kenya.
3. Accurately follow your plan and construct your bracelet precisely noting any adaptations made along the way.
4. Demonstrate a respect for the person and work of your fellow students when giving constructive comments.

National Standards

MATHEMATICS

Build new mathematical knowledge through problem solving

Solve problems that arise in mathematics and in other contexts

Apply and adapt a variety of appropriate strategies to solve problems

Monitor and reflect on the process of mathematical problem solving.

Apply number operations accurately.

VISUAL ART

1. Understanding and applying media, techniques, and processes.
2. Using knowledge of structures and functions.
3. Choosing and evaluating a range of subject matter, symbols, and ideas.
4. Understanding the visual arts in relation to history and culture.
5. Reflecting upon and assessing the characteristics and merits of their work and the work of others.