The Transformation of Art Project*

*Originally composed using ChatGPT

Essential Question: *How do art and math unite cultures around the world?*

Project Overview:
Art, writing, and mathematics are some of the few cultural elements that unite us as humans regardless of geography. In this project, students will explore how transformations in geometry are used in art across different cultures. They will examine different examples of art from around the world, identify the transformations used in each piece, and create their own original artwork using transformations.

Materials:
- Art supplies
- Rulers
- Protractor
- Graph paper
- Computer with internet access

Instructions:

1. **Introduction**: Begin by looking at examples of artwork from a variety of cultures. Use a "Same and Different" protocol to juxtapose the pieces being viewed.
2. **Inquire**: Use a "Notice and Wonder" protocol to help students generate questions about the use of transformations in art across cultures and within their own. Lead a discussion on how artists use transformations to create visual interest and to convey meaning in their artwork.
3. **Analyze:** Students will choose a country or region to explore and will select a variety of pieces of art which utilize transformations. Students should analyze each piece of art and describe the types of transformations used within the artwork and reflect on how it impacts the overall design.
4. **Apply and Create:** Students will create their own original artwork using geometric transformations. They can choose to create one in a similar fashion to the culture they studied or create a hybrid style and infuse their own elements. Students should use geometric and mathematical tools to create precise designs.
5. **Reflect:** Students will compare and contrast their original piece to those of the culture they studied and will reflect on both their artwork and the process. Student reflection should include consideration on how the transformations contributed to the overall design and what their understanding of the use of transformations in art across cultures.

6. **Present**: Students will showcase their original pieces of art in a classroom gallery. Their presentation should explain the cultural influences of their design and the transformations they used, as well as their reflections on the process of creating.

Assessment:

Assessment of mathematical content and artistic expression should be considered separately. Students precision in application and demonstration of understanding of transformations should be assessed using teacher or school created rubrics aligned to the standards. Feedback should be provided on technical skill and expression, but may serve the student best as written or oral feedback and not a component of their mathematical score.

Sample Rubric:

Rubric for Assessing Student Analysis of Transformations in Artwork

Criteria:

- Understanding of types of transformations used in artwork
- Explanation of how transformations contribute to overall design
- Use of mathematical language and examples to support analysis

1 - Below Expectations:	2 - Approaching Expectations:	3 - Meets Expectations:	4 - Exceeds Expectations:
Mathematical Models	**Mathematical Models**	**Mathematical Models**	**Mathematical Models**
The student demonstrates a limited understanding of the types of transformations	The student demonstrates a basic understanding of the types of transformations	The student demonstrates a solid understanding of the types of transformations used in their artwork.	The student demonstrates a thorough understanding of the types of transformations

From Kristen Moore, via Edutopia.

used in their artwork. Transformations used to create their piece do not follow correct patterns. **Analysis + Critique** The student is unable to explain how transformations contribute to the overall design. Their analysis may be incorrect or incomplete.	used in their artwork. Transformations used may have minor errors. **Analysis + Critique** Students may struggle to explain how transformations contribute to the overall design without prompting. The analysis may be incomplete or lack detail.	Transformations used apply the rules of transformations accurately. **Analysis + Critique** The student explains how most of the transformations contribute to the overall design. They use mathematical language to support their analysis, but may lack precision or clarity in some areas.	used in their artwork. Transformations used apply the rules of transformations accurately and in composition with one another. **Analysis + Critique** The student explains how each transformation contributes to the overall design. They also use precise mathematical language and provide clear examples to support their analysis.

Note: The rubric can be adjusted based on the specific objectives and expectations of the project.