

Functional Stained Glass

Smithfield High School
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Vetted Project: The students will be able to identify patterns and graphs of functions in architecture, art and the world around them. Once they make the mathematical connections, the students will be able design and create their own art work by applying concepts involved in graphing functions. Sustainability: It is important to make mathematical connections in art and vice versa. As Sandor Kovacs stated in "A creative marriage of Art and Math," by Nancy Joseph, "The problems we are trying to solve are very different, and we would probably use different words to define creativity, but the creative process is similar." Once we realize this, the world may never be frightened by math again. Driving Question: What mathematical connections are present in nature, artistic expression and architecture? Student Reflection: Students loved the idea of integrating math and art. From creating their designs with functions in a graphing calculator to adding color to their faux stained glass creations, they all found pleasure in the experience. Some of them would have liked more time to create their designs in the calculator and others would have liked to spend more time coloring/painting their project. Teacher Reflection: It is always rewarding to know the students have learned and mastered the content which is being communicated. Listening to the students communicate the math correctly, to then watch them apply and bring the math to life in a piece of art work was definitely an impactful experience for the entire class. Lessons Learned: In the future, I would like to begin the project with the students earlier in the semester to allow for more time. It would also be neat to make a real stained glass window/mural in the future. Teacher Rating: Definitely would recommend (5 of 5).

I. Authenticity

Demonstrating
Exhibit / Contest

Producing / Revising
Execute Multiple Drafts
Model or Prototype
Product
Revise a Product or Service
Spec / Design
Test for Quality / Integrity

Presenting
Utilize Visuals

II. Media Produced

Digital Content
Digital Photography
Physical Drawings & Fine Arts
Painting
Product Drawing or Sketch

III. Challenging Problems

Themes
Field-based Work
Topics: Physical World
Numbers & Shapes

IV. Achieved Literacy Skills

Information / Technology
Master Uses of Technology
Media
Utilize Media Creation Tools

I. Parameters & Feasibility

Project Timeframe
1-2 Weeks
Assessment Timeframe
More than a Class Period

of Project Members
Individual
Pair
Small Group

Grade Level
High School (Grades 9-12)

Authentic Audience / Evaluators
Peers
Parents
Teachers & Administrators
Community Members
Consumers / Clients

Special Test Accommodations
Presentation of Materials / Directions
Setting
Student Response
Timing / Scheduling

II. Intended Learning Outcomes

Creativity
Brainstorm
Change
Design / Create

Envision / Invent
Improve / Refine
Communication
Engage Creatively
Instruct
Terms, Concepts or Calculations

Collaboration
Develop Trust
Encourage Others
Exercise Flexibility
Incorporate Feedback

Critical Thinking
Clarify Meaning
Model with Math
Reflect Critically on Learning
Solve Problems Innovatively

III. Success Skills & Depth of Knowledge

Cognitive Demand
Identifying / Remembering
Comprehending / Understanding
Applying
Analyzing
Creating

Social & Emotional Skills
Self-awareness

Learning Styles / Intelligences
Bodily / Kinesthetic
Interpersonal / Social
Intrapersonal / Introspective
Logical / Mathematical
Visual / Spatial

Assessment Structures / Resources
Checklists
Rubrics

IV. CTEs & Disciplines

Career & Technical
Arts & Entertainment
Education

Arts
Art Studies
Dance Studies

Mathematics
Algebra & Trigonometry
Geometry
Logic



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