

CERAMIC AND GLASS INDUSTRY FOUNDATION

November 3, 2022

Tisha Weaver
322 West Maple Ave
Lancaster, KY 40444

Dear Tisha:

On behalf of the Ceramic and Glass Industry Foundation Board of Trustees, it is my pleasure to inform you that your grant application titled "Materials Science and Arts Gifted and Talented Program" for \$2,500.00 in funding has been approved. Additionally, in celebration of the International Year of Glass, we would like to send you a complementary Glass Science Kit to supplement your project.

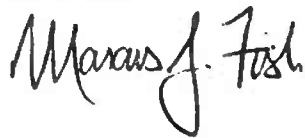
This grant is awarded subject to the following conditions:

1. Grant funds must be used solely for the purpose outlined in your grant application and may not be expended for any other purpose without the Ceramic and Glass Industry Foundation's prior written approval.
2. The grantee is to provide a written narrative describing your progress in achieving the purposes of the grant, including the use of the supplemental funding. The reports are due every six months and at the conclusion of the project and should be submitted to the Foundation by March 15 and September 15.
3. If the grantee has occasion to announce or acknowledge this grant publicly, please indicate that support was provided by the Ceramic and Glass Industry Foundation. The Foundation may include information regarding this grant, including the amount and purpose of the grant, any photographs you may provide, your logo or trademark, or other information or materials about your organization and its activities, in the Foundation's periodic public reports, newsletters, and news releases.

Please acknowledge your receipt of this letter and your agreement with the outlined terms by signing and returning a copy to us. The funds will be mailed to you shortly after you return this signed form.

The Ceramic and Glass Industry Foundation is proud to support your project. Thank you for the good work you are doing!

Best wishes,



Marcus J. Fish, CFRE
Development Director
The Ceramic and Glass Industry Foundation



Amanda Engen, Ph.D.
Program Manager
The Ceramic and Glass Industry Foundation

Accepted By:

Signature of Grant Recipient or other Authorized Official

Date

Project Grant Application

APPLICANT'S ORGANIZATION

Garrard County Schools

ORGANIZATION'S WEBSITE

<https://www.garrard.k12.ky.us/>

ORGANIZATION'S ADDRESS

322 West Maple Ave
Lancaster, Kentucky 40444
United States

PROJECT LEADER'S NAME

Tisha Weaver

PROJECT LEADER'S EMAIL

tisha.weaver@garrard.kyschools.us

CONTACT PHONE NUMBER

(513) 461-4484

SHIPPING ADDRESS (IF DIFFERENT FROM ABOVE)

324 West Maple Ave
Lancaster, Kentucky 40444
United States

ARE ANY OF THE PROJECT ORGANIZERS MEMBERS OF ACERS, KERAMOS, OR AN AFFILIATED MATERIALS SOCIETY (WORLDWIDE)? IF YES, PLEASE LIST MEMBER AND AFFILIATION BELOW.

no

PROJECT TITLE

Materials Science and Arts Gifted and Talented Program

ANTICIPATED START DATE ANTICIPATED END DATE

01/04/2023

04/01/2023

TARGET AUDIENCE APPROXIMATE NUMBER OF PEOPLE SERVED BY THIS

**GEOGRAPHIC AREA TO BE SERVED BY THIS PROJECT
PROJECT**

Garrard County in South-Central Kentucky

PROJECT SUMMARY**1. Brief Description**

As a part of the gifted and talented curriculum of our school district, the Materials Science and Arts program, will have three main components. First, on a special in-school field trip, high school and middle schools gifted (with a science or visual arts domain) students will participate in a Materials Science Lab Day. In one of our high school laboratory classrooms, students will learn about the properties of glass and ceramics through use of the glass science kits and additional explorations (in conductivity, strength, brittleness, thermal influence, etc.) that will allow them to use their experimental design skills to obtain more information about the materials. In an off-campus field trip the same high school and middle school students will participate in a glass-blowing lesson with in a glass studio and a ceramics lesson. These lessons will incorporate the properties of glass and ceramics and allow the students to blow their own glass artwork and create a piece from clay. These same students will design a lesson about what they have learned for our 4th and 5th grade elementary GT students, including experiments, demonstrations, and applications of glass and ceramics science and a community art piece design.

On another day, our gifted 4th and 5th grade students from the elementary schools in our district will travel to the high school and participate in a lab day with a partner from the middle or high school classes. In addition to the science investigative work, the elementary students, working with an upper level student will create a piece of artwork from clay and a community glass piece with glass-bending.

2. Goals and Objectives

We will increase the science laboratory and experimental design curriculum of our gifted and talented program. We will expose the gifted students in the science domain (They have been designated gifted in the area of science.) to applications of research and technology and link the student of chemistry and physics to the field of materials science. We will integrate the lab and art experiences into career education and counseling.

We will introduce how the properties of a material can influence the art produced with said material to students in 5th-12th grade.

We will integrate the studies of our visual art and science domain gifted students, increasing awareness and exposure to how the domains are related.

We will accelerate the vertical alignment (multiple grade levels) of our gifted program by domains.

3. Importance

This project is important in 3 ways: It increases exposure to specific fields of science and materials in art, develops a program that provides deeper learning and mentorship across grades and domains in our gifted and talented program, and requires students to utilize science and art process.

Often students want to be "scientists" or "artists," but in our rural community there are not many examples of people pursuing science or art as a career. Without examples of real-world applications, even our gifted students fail to find a mentor or niche in college to create a pathway forward in those areas. If one wants to become a doctor, students have intimately seen dentists, general practitioners, orthopedic surgeons, and unfortunately in our community, for their family members, oncologists. There is general knowledge that when you become a doctor, you will specialize. Although there are an infinite number of ways to become a scientist or an artist, there is very little exposure to the specifics of those fields. With this program, students can participate in chemistry and physics being utilized to create substances that meet a technological needs - even ones that provide doctors more effective treatments. They will experience how an understanding of materials science can influence their art.

Our gifted and talented program has been implemented by grade level (a common practice) since its inception. This

year we are continuing to serve students by grade level, but are developing a 2-3 year cycle of programs to allow students of all ages to work together in their domains (areas of giftedness.) Deeper understanding is achieved when one develops the ability to teach the concept to someone else. Younger students are less likely to drift from their giftedness when they develop relationships with older students who are pursuing the same interests.

We are also working to integrate programs between specific domains. It is important for students to understand the influence seemingly unrelated studies may have in their work. It also encourages the social growth of students who are disproportionately likely to have social-emotional troubles due to the frustration that occurs from asynchronous development (when a gifted student is years ahead in one particular area of growth, but is on-grade-level for others.)

WHAT IS THE TOTAL BUDGET FOR THIS PROJECT?

\$3103.00

WHAT IS THE TOTAL AMOUNT OF SUPPLEMENTAL FUNDING YOU ARE REQUESTING? (UP TO \$5,000)

\$2500.00 ~~\$3400.00~~

DESCRIBE HOW YOU WILL USE THE SUPPLEMENTAL FUNDING.

~~\$150.00~~ ~~\$230.00~~ Mileage/Gas - Travel to and from schools and to art studio:
~~\$150.00~~ ~~\$367.00~~ Bus Driver (\$21/hr driving; \$14/hr waiting)
~~\$0.00~~ ~~\$500.00~~ Lab Supplies (borax, carbon, glass tubing, etc.)
\$600.00 Glass Studio experience
\$1600.00 Ceramic Studio experience
~~\$0.00~~ ~~\$103.00~~ Clay
4 glass glass kits
4 classroom materials kits
\$2600.00 Total Supplemental Funding

Additional Costs Covered by Garrard County Schools Gifted and Talented Program:

Lab supplies \$500.00 Clay \$103.00
Instructors' salaries
Lab equipment
Project-planning
Substitute Teacher per diem: \$100.00/day x 6 days (for teachers to attend field trips and be present for instruction and lab safety)

STATEMENT OF NEED

Often students want to be "scientists" or "artists," but in our rural community there are not many examples of people pursuing science or art as a career. Students from our county who go to college are unaware of the diversity of careers in the science field and because economic stability is a necessity for students from our region, they choose a known career path - even if it is outside their area of giftedness and/or interest.

We need to develop programs that engage our students with concepts that allow them to imagine and research career options, work in their identified domain and between domains of giftedness, and provide leadership and mentorship among our multi-aged gifted community. The funding for gifted and talented education, both at the state and federal level, lags behind most other programming, simply because there are limited funds and it is a common perception that no matter their experiences gifted students will "make it." In reality, gifted students often go underground in middle school for social-emotional and boredom reasons and never "resurface" utilizing their giftedness. Up to 90% of gifted students are good students and do enough to meet the expectations of parents and teachers, and then as adults, report that they are continuously unfulfilled in life. This is devastating for an individual, and harms our country's and humanity's ability to learn and create by not encouraging and providing opportunities to grow, develop, and utilize the best of our abilities.

With the effects of the pandemic on education, all available resources are being directed to intervention and "make-up" for lost time, content, and social-emotional development. There is no current movement to nurture our gifted students in the current national education conversation.

We are also working to integrate programs between specific domains. It is important for students to understand the influence seemingly unrelated studies may have in their work. It also encourages the social growth of students who are disproportionately likely to have social-emotional troubles due to the frustration that occurs from asynchronous development (when a gifted student is years ahead in one particular area of growth, but is on-grade-level for others.)

The students who will benefit directly are the gifted and talented students, grades 4-12, with domains in the visual arts and science. They will not only receive application of core content knowledge and practice with science and art processes, they will understand the relationship of these studies to real-world careers and contributions. Students will be introduced to mentors and required to lead in the areas of their giftedness. Indirectly, an entire cohort of students will understand the engagement of the system with their education, and that may increase how they value their own skills and talents - allowing them opportunities to dream and plan beyond their local experiences.

GOALS AND OBJECTIVES

1. Gifted middle and high school students will utilize prior knowledge and experimentation skills to conduct and design experiments to determine properties of glass and ceramics. (Middle and high school lab day.)
2. Gifted middle and high school students will utilize the properties of the materials to create artworks. (Middle and high school field trip day.)
3. Gifted middle and high schools students will create and implement lessons that include direct instruction, demonstrations, experimenting, and creating to mentor 4th and 5th grade elementary students and teach the properties of glass and ceramics. In these lessons students will learn about the types of contributions and careers possible in material science. (Lab day and Elementary School Day)
4. Student will create relationships across areas of giftedness and grade-levels.
5. Students will increase their understanding of what specific science and art careers are available to them.

IMPLEMENTATION PLAN

There are five schools and two art studios with whom we will need to coordinate to determine the specific dates for the events in our program.

Indicating the month of completion, provides us with means to meet all the schools' and studios' requirements and reschedule, if necessary, due to inclement weather. (School is closed.)

December 2022: Order Materials and Supplies; Finalize curriculum for Lab Day

January 2022: Complete Middle School High School Lab Day

February 2022: Complete Middle School High School Studio Day (Weston Glass Studio, Berea, KY and Berea Pottery)
March 2022: Complete Elementary School Science/Art Mentor Day

The Gifted and Talented Teacher, Tisha Weaver, is responsible for the development and delivery of the Lab Days and Field Trip Days. This includes the developing the curriculum, securing and organizing supplies and equipment, and implementing the lessons directly to the students with co-teachers. Communication with and permission from care-givers also falls to Ms. Weaver. Ms. Weaver has created efficient means of communicating with families and will utilize those methods to do so. Designing and implementing enrichment programs for gifted and talented students is part of her job description and time is included in her work schedule to do so.

Ms. Weaver is also responsible for independent study and career plan counseling for gifted high school students. Students will be encouraged to explore the education and career opportunities presented in this program. It will be added to the list of base ideas for independent study and the materials made available to students during independent studies class time.

In planning, we contacted both art studios securing pricing and also, advice on organizing large group visits. Weston Glass Studio is able to engage 10 students at a time. If we rotate this with the Berea Pottery experience, we will need 2 days - half of the students each day - for everyone to attend both sessions. Both studios are excited to incorporate materials science into their presentations and activities.

The Gifted and Talented Coordinator, Larry Caudill, is responsible for logistics of student travel, minimizing class disruption (removing students from core classes for a day,) and evaluation of the program curriculum for integrating into the standard gifted and talented curriculum. With support from the supplies this year, this exact program can be implemented in a three-year cycle, hopefully partnering with the art studio and supporters to finance the supplies. Bus routes are restructured as gas costs fluctuate, with a more economical plan being created, we may be able to utilize existing bus routes (as they are created between schools) for all day programs. Without further funding, we can use the format to implement a materials science study each year into our curriculum for our middle school resource classes. With a cycle of 3 materials to study, students will study a new material each year during 6th, 7th, and 8th grade. It is a perfect topic to develop with the variety of materials and the cross-curricular art connection.

MEASUREMENTS AND EVALUTATION METRICS

1. Students will observe all lab safety procedures.

No injuries.

2. Students will understand the basic physical and chemical properties of glass and ceramics. Materials science lessons will be created and implemented by middle and high school students. In our program, we value the deeper understanding that knowledge of content and skills is mastered when a student is able to teach others. 3.

Elementary students will complete a 10-question pre- and post-test. We expect an increase of at least 5 correct answers per student.

4. The common glass-bending artwork will be displayed at the GEC building on the main campus - where the gifted and talented classroom is housed.

5. High school and Middle school students will complete a self-evaluation indicating their levels of growth in scientific, artistic, and career-readiness.

6. Our studio partners will complete a survey about the lesson, artwork, student level, and overall experience to provide feedback to use in future community partnerships.

MISSION ALIGNMENT

By providing in-depth exploratory opportunities to our upper level students, we increase their prospects of entering the materials science field and incorporating materials science into another field of study, technology development, or commercial operation. Working exclusively with students gifted in science and/or the visual arts, this program targets students with talent utilized in material science. Our young scientists will enjoy a focused approach to studying chemical and physical properties, and be inspired by the applications of such knowledge and skills. Additionally, by practicing creating art with these materials, they gain an instant and deeper appreciation of how the properties of glass and ceramics can be utilized to design, engineer, and create. Our young artists will learn the science-reasoning behind the properties of their media, and it may inspire them to utilize glass or ceramics in

innovative ways - or to encourage innovations glass and ceramic technology based on needs they have as an artist.

By working with students of various ages, our older students will develop their leadership skills and receive much positive feedback from both younger students and adults for their knowledge and skills in the area of glass and ceramic science. The younger students receive mentorship in their art and scientific studies and are more likely to continue to explore their abilities in those areas.

Finally, by adding material sciences to our resource and independent study and career counseling opportunities, Garrard County gifted students will consider material science careers, when before they did not know it existed.

HIDDEN FIELD

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