Art as an integrator for Research, Education and Outreach

Donna Gobin

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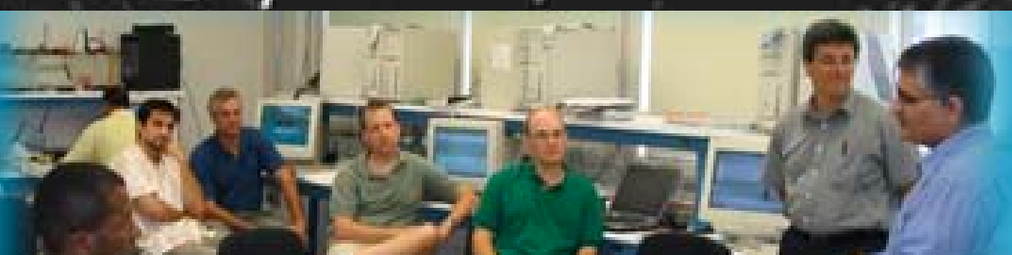

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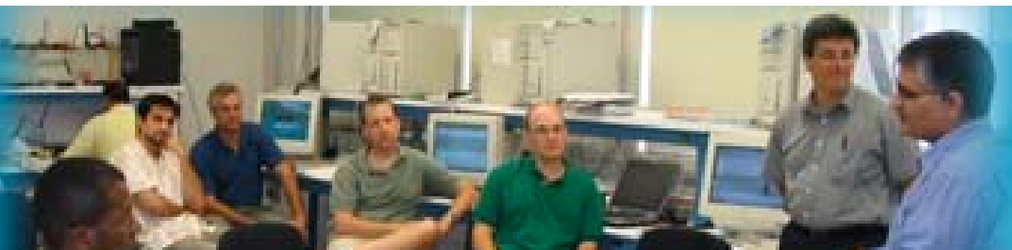
Main Objectives

- Integrating art and science into an educational program focusing on materiality
- Implementing the educational program in NYC Public Schools



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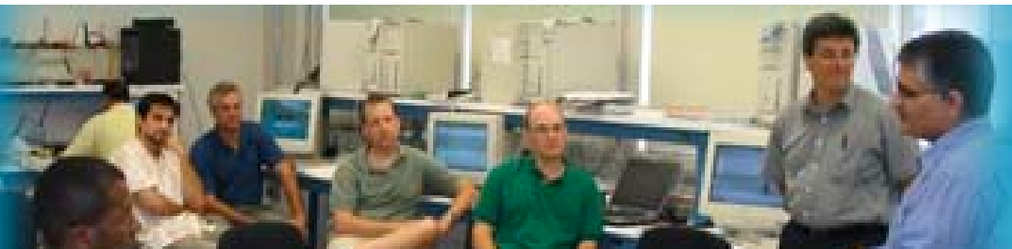
Specific Goals

- Establish an interdisciplinary collaborative team
- Spread scientific and artistic literacy
- Infuse and stimulate knowledge, skills, creativity , versatility and a sense on wonder amongst youngsters
- Integrating scientific activities into artistic creations and vice versa
- Broaden the ties of NYC-Poly with local community



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Collaborative team

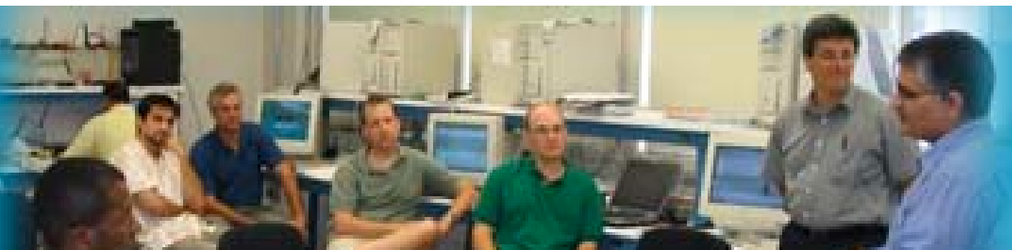
Scientific Community

General Public

Art

NYC Public Schools

Materials Art Community



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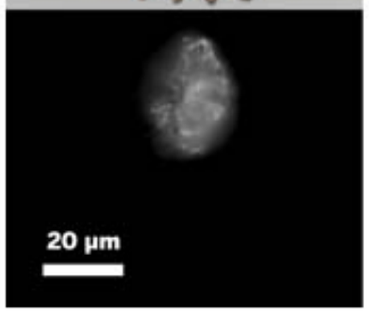
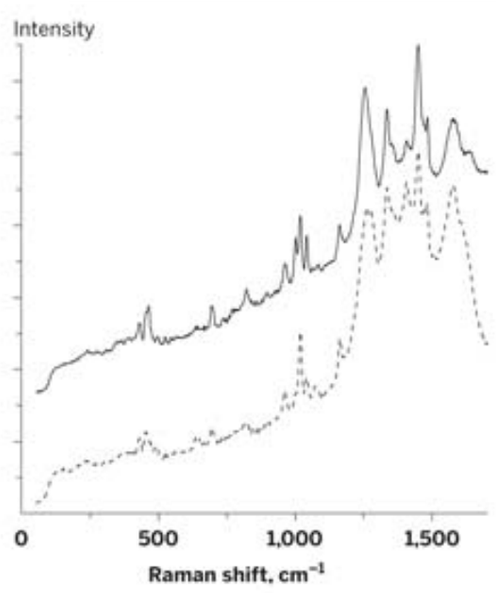
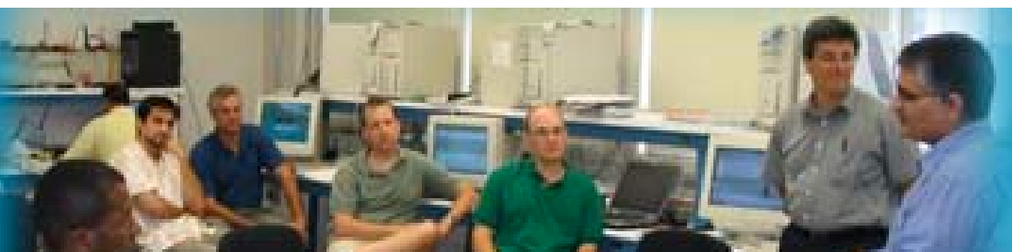
Scientific and Artistic Literacy





Materials in artistic work provide:

- ways into technical discourse
- interdisciplinary discussion and materials science and mechanical engineering
- interface to discuss ethical and cultural impact of conventional/new materials



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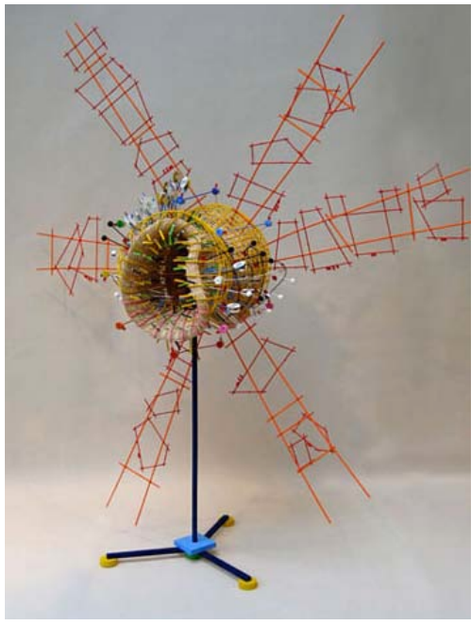
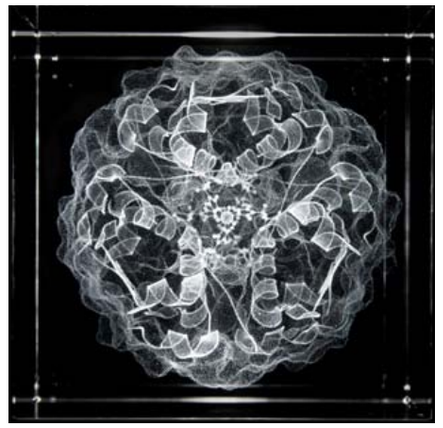
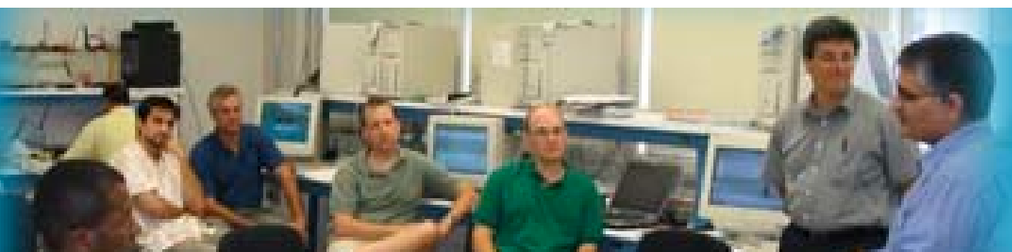
Stimulate creativity

Art is a vehicle that offers

- an informal approach
- introduce fundamental concepts in materials science
- changes the appreciation of both artistic and scientific content







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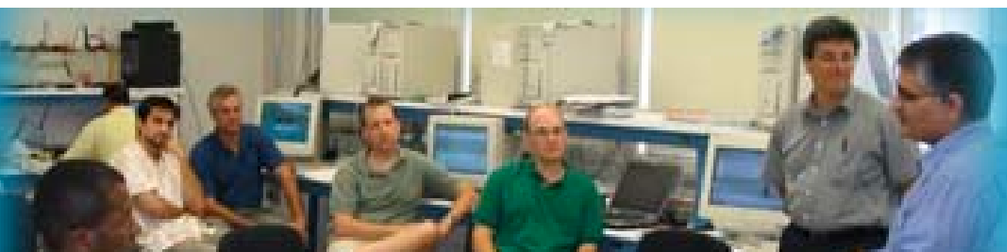
Scientific and Artistic Creations

Demaines at MIT

- computational origami
- math and art are complementary endeavors
- use complex mathematics to make beautiful art
- construct sculptures to help solve intractable math problems



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Scientific and Artistic Creations

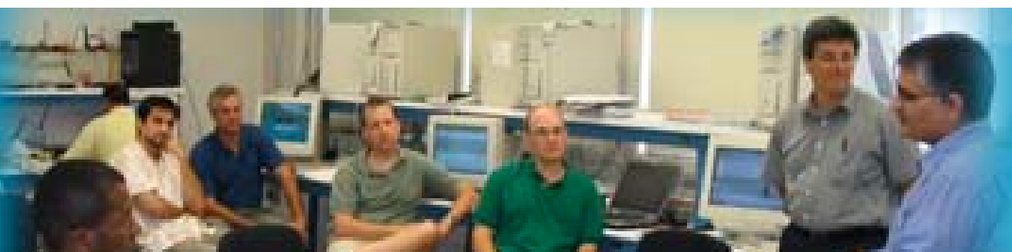
Casting iron in a sand mold

Aristide Maillol, Night, ca.1902-07, (cast 1960)

David Smith

Materials in Art and Technology

- Rohit Trivedi, senior scientist at Ames Laboratory
- evolution of materials-processing dates back to discovery of fire
- artists, scientists and manufacturers use same methods
- craftsmen were first to manipulate properties of metals and ceramics



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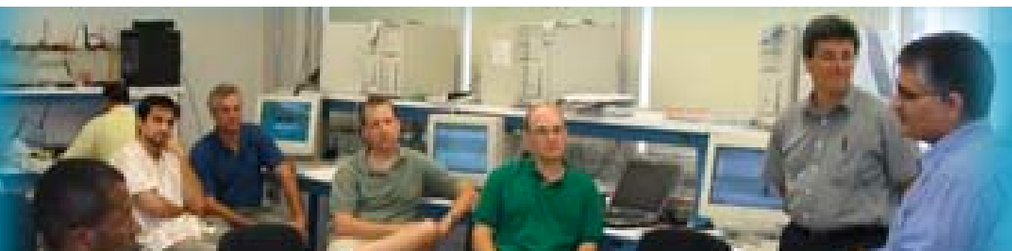
Program Goals

With the implementation of this program, students will attain:

- Art History and Art Literacy
- Science Knowledge
- Math Knowledge
- Appreciation of the intermingling of topics



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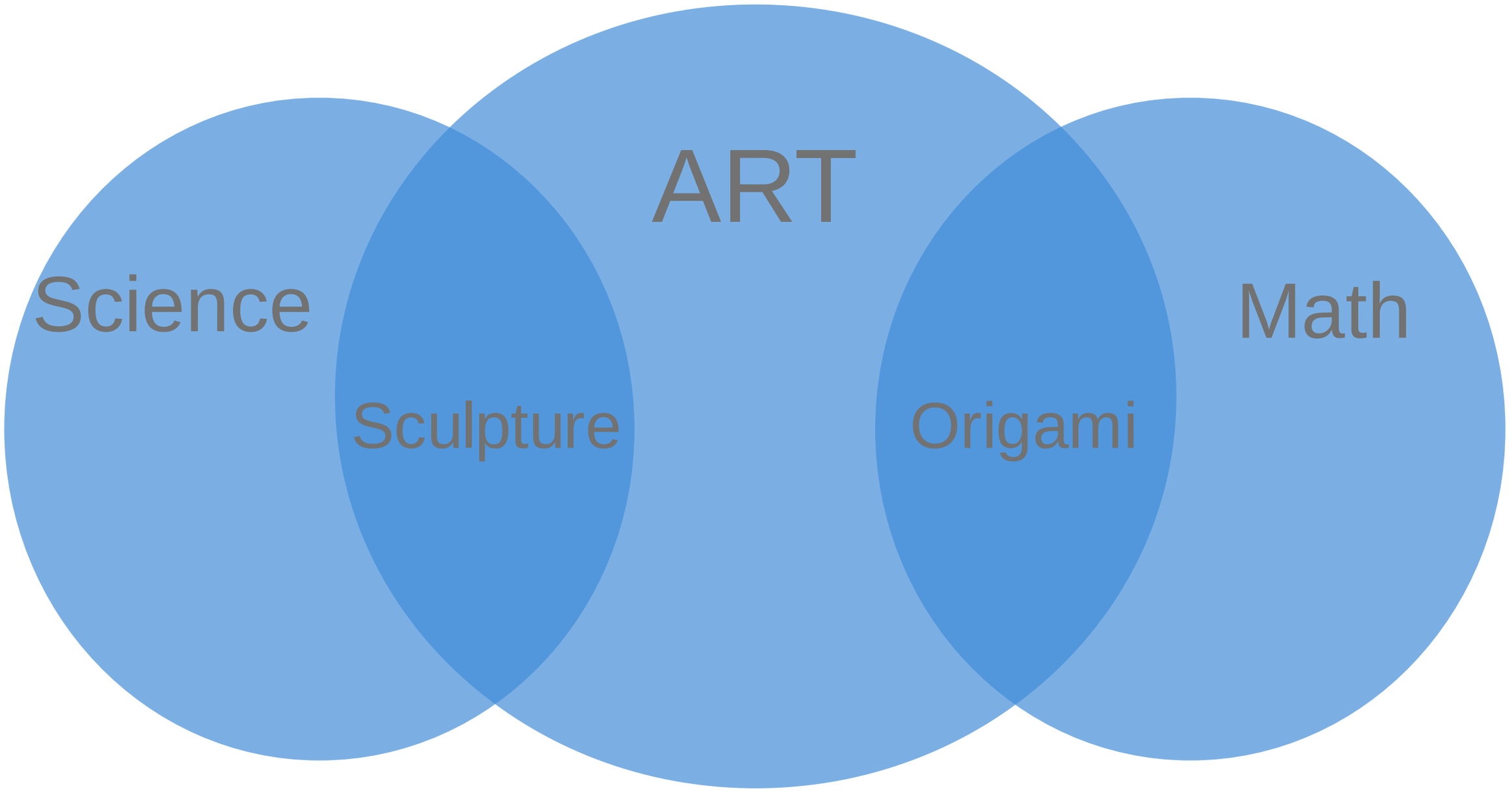

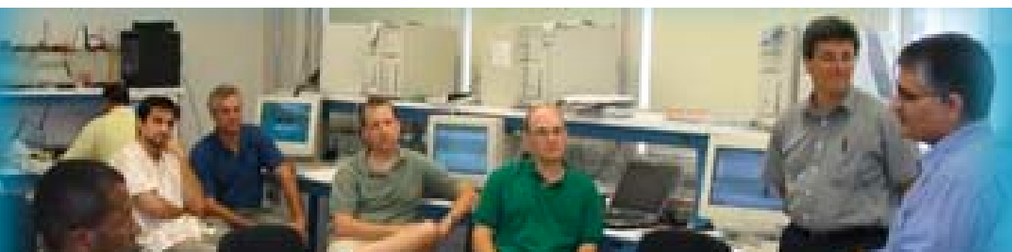

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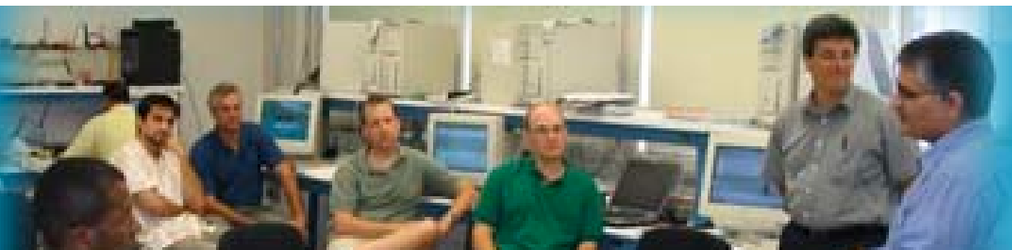
Artistic Knowledge

Students will have attained the knowledge needed to:

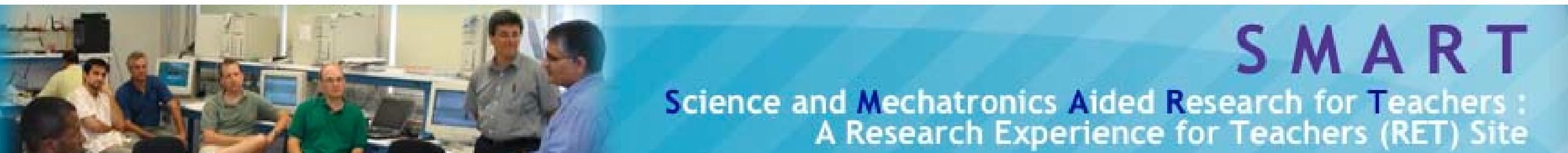
- Classify art pieces into periods, such as cubism
- Recognize famous artists and artwork
- Consider limitations and advantages of certain materials used in artwork
- Exposure to multiple museums and galleries



Scientific Knowledge

Students will be exposed to:

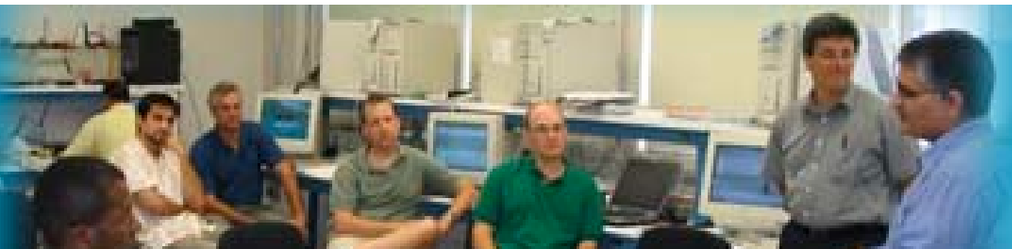
- Introduction to notions of Material Science
- Basic material properties (metal, ceramic, wood)
- Conduct several laboratory experiments
- Learn scientific concepts through ideas and creative artwork, not formulas
- Exposure to art in materials (microstructures for example)



Mathematical Knowledge

Students will learn:

- Basic geometric properties of 2D and 3D figures
- How to represent patterns and simple geometrical relationships
- Identify the results of transformations on plane figures
- Develop flexibility in solving problems



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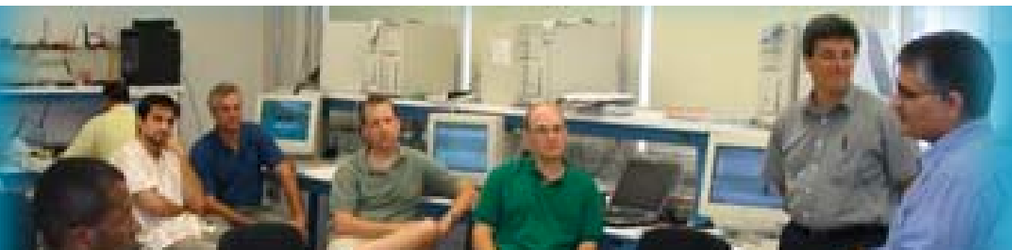
Evaluation and assessment

Students will be evaluated through:

- Informal assessments byway of conversations at several points in lesson
- Formal written assessments
- Physical presentation of art pieces
- Oral presentation on techniques used to produce artwork



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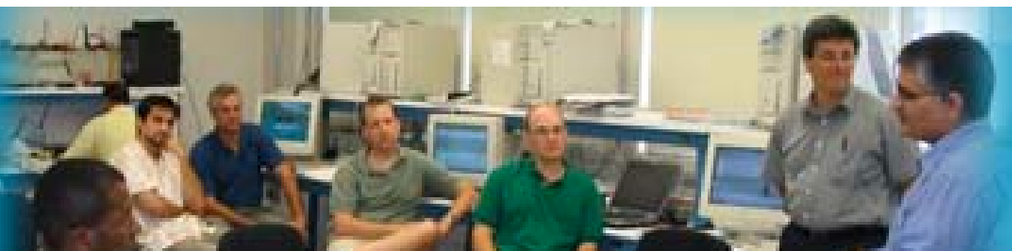
Conclusions

- Implement Art as an Integrator program in Fall semester at two NYC Public Schools
- Host a gallery exhibit featuring student art work
- Assess success of program based on previous data and exam results for the class concerned.



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