

# Artist or Scientist?



Sometimes great minds really do think alike. Below are some quotes by artists and scientists. Read them carefully, and see if you can figure out who's who!

1. "I wanted very much to learn to draw, for a reason that I kept to myself: I wanted to convey an emotion I have about the beauty of the world. It's difficult to describe because it's an emotion.... It's a feeling of awe... which I felt could be communicated through a drawing to someone who had also had this emotion." Artist or scientist?  Artist  Scientist
2. "We live in a beautiful and orderly world, not in a chaos without norms, even though this is how it sometimes appears." Artist or scientist?  Artist  Scientist
3. "The most beautiful experience we can have is the mysterious—the fundamental emotion which stands at the cradle of true art and true science." Artist or scientist?  Artist  Scientist
4. "The function of art is to disturb. Science reassures." Artist or scientist?  Artist  Scientist
5. "The big artist... keeps an eye on nature and steals her tools." Artist or scientist?  Artist  Scientist
6. "Art is the queen of all sciences communicating knowledge to all the generations of the world." Artist or scientist?  Artist  Scientist
7. "Art is an outlet toward regions which are not ruled by time and space." Artist or scientist?  Artist  Scientist
8. "Where we face [the world] as free beings admiring, asking and observing, there we enter the realm of Art and Science." Artist or scientist?  Artist  Scientist
9. "Have young people ever been curious about the world around them? Do they ask questions? Do they investigate and learn? Then they are young scientists in search of answers, or they are young artists who enjoy speculating about the importance of the answers." Artist or scientist?  Artist  Scientist

Check your answers with your teacher. How did you do? Now that you know who's who, can you come up with your own quote about what art and science have in common? \_\_\_\_\_

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# A Portrait of an Artist-Scientist



## Dear Science Teacher,

*Time* magazine recently featured an article titled "How to Bring Our Schools Out of the 20th Century." The article highlights a growing trend in education: the call for a cross-disciplinary educational system that fosters creativity and invention.


The students who pass through your classroom will eventually enter a rapidly shifting job market and must have the ability to adjust, think on their feet, and be innovative. To prepare students for tomorrow's challenges, more and more educators are trying to teach "portable skills" like critical thinking, and the ability to draw connections between different ideas.

Cross-disciplinary programs are an effective way to help students develop these skills. Many schools have shown interest in implementing such programs, and VSA arts has partnered with Weekly Reader Custom Publishing to bring you this free, cross-disciplinary resource that features artist Mark Parsons and explains how his work connects the worlds of art and science.

This booklet consists of 31 identical student inserts and one teacher's guide (the cover). It also contains a teacher survey and reply card. Although these materials are protected by copyright, you have permission to make as many copies as you need for educational purposes. We also encourage you to distribute these materials to colleagues interested in a fresh way to engage students.

Thank you for inspiring your students to think across multiple disciplines, and for giving them the tools to continue learning beyond your classroom.

Best wishes,



Soula Antoniou  
President  
VSA arts



Tell us what you think. Please take a moment to complete and return the enclosed survey and reply card. Or, complete the survey online at [www.wrinsiders.com/vsa](http://www.wrinsiders.com/vsa). Your comments will help us create future programs to meet your needs and those of your students. Thank you.

## Target Audience

This program is designed for students in grades 6 through 10.

## Program Objective

To inspire students to think critically about the connection between art and science

## Standards

This program meets Science, Art, and Thinking and Reasoning standards for grades 6 through 10 as outlined by Mid-continent Research for Education and Learning (McREL). Specific standards and benchmarks observed are:

### Science

*Standard 13.* Understands the scientific enterprise (grades 6–10)

### Art

*Standard 1.* Understands connections among the various art forms and other disciplines (grades 6–10)

### Thinking and Reasoning

*Standard 1.* Understands the principles, processes, and products associated with arts and communication media (grades 9–10)

*Standard 3.* Effectively uses mental processes that are based on identifying similarities and differences (grades 6–8)

## Bibliography and Resources

VSA arts:  
[www.vsarts.org](http://www.vsarts.org)

Art & Science Collaborations, Inc.:  
[www.asci.org](http://www.asci.org)

Online Gallery of the Art of Science Competition at Princeton University:  
[www.princeton.edu/~artofsci/gallery](http://www.princeton.edu/~artofsci/gallery)

Mark Parsons' Web site: [www.ThatArtist.com](http://www.ThatArtist.com)

*Visualizations: The Nature Book of Art and Science* by Martin Kemp (University of California Press, 2000)

## Continue the Lesson Online

Visit [www.vsarts.org](http://www.vsarts.org) with your students to view a vodcast that discusses the overlap between art and science and features the work of Mark Parsons. After viewing the vodcast, have your students brainstorm some scientific and technological advances that affect them on a day-to-day basis.

## Foundation Creation

After students have read the article about the intersection of art and science as seen through the eyes of Mark Parsons, encourage them to create their own *Foundations* images.

Remind students that the *Foundations* series is a convergence of two visual systems: architectural drawings and a scientific rendering of molecules. In Mark's case, the architectural plans are taken from medieval religious structures. The molecular drawings are representations of nucleotides—the primary components of DNA. A relationship is suggested through the formal interplay of the two systems of representation.

Ask students to create floorplans of a bedroom, a favorite workplace, the field where they play their favorite sport, or another place. If they are not confident with their drawing abilities, a computer rendering could be used. Advanced students can be asked to create their floorplans to scale.

Next, ask students to research and select a DNA molecule to overlay onto their floorplan. Encourage students to be creative and search for the integration of art and science as they select DNA molecules to superimpose on their floorplans.



A detail from Mark Parsons' *Foundations* series

## Create a Self-Portrait

Have your students create a genetic self-portrait based on the list of known human dominant and recessive traits provided on the next page. Self-portraits can be drawings, collages, or sculptures.

Explain to students that genes come in pairs, one from the father and one from the mother, and each contains a set of instructions for the creation of a particular trait. For example, one pair of genes determines eye color. The gene for blue eyes is recessive, which means that to have blue eyes, someone must inherit one blue eye gene from both parents. However, this also means that someone who has brown eyes might actually carry a blue eye gene as a recessive inheritable trait.

Dominant	Recessive
brown eyes	blue eyes
nose turns down	nose turns up
long eyelashes	short eyelashes
almond shaped eyes	round eyes
freckles	no freckles
unattached earlobe	attached earlobe
oval shaped face	square shaped face
thick eyebrows	slender eyebrows
dimples	no dimples
can roll tongue	can't roll tongue

Tell students that other pairs of recessive and dominant genes work the same way as brown and blue eyes do, and then list the traits in the chart above on the board. Tell students that they should pick four out of the ten genes listed to create a genetic self-portrait. They should create a visual representation of the features they choose as they appear on themselves, then take their best guess at the pair of genes that describes this trait in each of their parents. For example, a blue-eyed person might draw a self-portrait with blue eyes and guess that, since both of his or her parents have brown eyes, they must each have a gene for brown eyes and a gene for blue eyes. The student should create a visual representation of this guess.

## Artist or Scientist?

On the back page of this guide, you'll find a reproducible activity that presents a list of quotes—some by artists and some by scientists. Photocopy and distribute this activity and have students take a moment to guess who's who. Go over answers as a class, asking students to explain their choices. Discuss the preconceptions your students may have about the differences between artists and scientists. Then have students use the space provided at the bottom of the activity sheet or a separate piece of paper to write their own quotes about the overlap between art and science.

## Share Your Project!

VSA arts is interested in the artwork that results from these activities. Please take a moment to visit [www.vsarts.org](http://www.vsarts.org) to submit images of your students' projects and find out how you can enter to win a classroom visit from Mark Parsons. Entries must be received before December 31, 2007.

## Answers:

- 1. Scientist:** Richard Feynman won the Nobel Prize in Physics in 1965. He invented Feynman diagrams, simple drawings that illustrate scientific principles so complex that they could formerly only be explained through math.
- 2. Artist:** M.C. Escher was a Dutch graphic artist who made prints (woodcuts, lithographs, etchings, etc.) inspired by mathematical principles.
- 3. Scientist:** Albert Einstein is considered one of the greatest scientists of all time. He won the 1921 Nobel Prize in Physics for his many contributions to theoretical physics, among them, the theory of relativity.
- 4. Artist:** Georges Braque was a 20th-century painter and sculptor who, along with Pablo Picasso, inspired the Cubist movement, a type of art that plays with ideas of geometry and perspective.
- 5. Artist:** Thomas Eakins was one of the greatest American painters in the late 19th and early 20th centuries. He was one of the first painters to take advantage of the new technology of photography, which he used to study the stages of people in motion.
- 6. Artist and Scientist:** Leonardo da Vinci was an artist-scientist who divided his time between inventing machines like the helicopter, dissecting the human body, and painting.
- 7. Artist:** Marcel Duchamp was an artist most often associated with 20th-century Dada and Surrealist movements in Paris and New York.
- 8. Scientist:** Albert Einstein
- 9. Artist:** Mark Parsons is the subject of this story.

VSA arts is an international nonprofit organization founded in 1974 by Ambassador Jean Kennedy Smith to create a society where people with disabilities learn through, participate in, and enjoy the arts. VSA arts provides educators, parents, and artists with resources and the tools to support arts programming in schools and communities. VSA arts showcases the accomplishments of artists with disabilities and promotes increased access to the arts for people with disabilities. Each year millions of people participate in VSA arts programs through a nationwide network of affiliates and in more than 60 countries around the world. VSA arts is an affiliate of the John F. Kennedy Center for the Performing Arts. For more information, visit [www.vsarts.org](http://www.vsarts.org).