

Next, have your students work in small groups to brainstorm a list of patterns, shapes, and examples of Fibonacci numbers they observe in their own community. You might assign this as homework or take a walk outside with your group to help generate ideas. Review the lists together once the groups are done. Then, have each group create a piece of artwork to demonstrate their findings. (Students might work independently if you deem it more appropriate.) If possible, allow students to choose the medium they want to work with to create the artwork.

#### ACTIVITY FOUR: IT'S SHAPING UP!

To start this activity, recap the geometric shapes that students observed when they created their lists and artwork for Activity Three. Next, copy and distribute the activity sheet. Ask your group if they found any of the shapes seen on this page (triangle, spiral, rectangle, and pentagon) when working on Activity Three. Students should use these shapes to create an abstract interpretation of the design they created in Activity Three, or an image representative of something found in nature. As an alternative, you might have each student create a piece of artwork that they feel represents themselves. Let students choose the option and medium that they feel most comfortable with, but provide them with some guidelines by reviewing the notes on the activity sheet. This is an activity that students might also do on the computer if it suits their needs.

Once done, display the completed artwork. Reproduce Activity Two and ask students to use these questions to examine and evaluate their classmates' artwork. The artists should then describe how they developed their concepts and what they see in their own work. Encourage your students to notice that each piece of artwork differs, even if the subject matter is similar. Ask your class to talk about any challenges they faced when completing the task.

#### EXTENSION ACTIVITIES

- Introduce students to the lives and work of other artists with disabilities by having them research the artists. Students should find an artist that interests them, and either write a report about the artist, replicate a piece of his/her artwork, or create an original piece of artwork to honor the artist. (See the resource list.)
- Work as a class to create a mural or collage representative of the group or the community. Each student's contribution should highlight his/her individual strengths.
- Create an abstract mural in which students enlarge and apply a portion of the art they created for Activity Three or Four.
- To raise awareness of and an appreciation for people with physical or learning disabilities, students should brainstorm potential barriers to people with disabilities. Then, either working in small groups or individually, students should design and create an object to provide equal access for people with disabilities.
- Illustrate a mathematical sequence. Create a series of sequences that students have to figure out, and then ask them to illustrate these sequences.

- Use the shapes from the activities to help students better understand proportions. You might make copies of the students' artwork and ask them to increase or decrease the shapes proportionally to test their measuring skills.

#### RESOURCES AND BIBLIOGRAPHY

##### WEB SITES

- [www.vsarts.org](http://www.vsarts.org)—VSA arts
- [www.vsarts.org/x523.xml](http://www.vsarts.org/x523.xml)—VSA arts' "Access and Opportunities: A Guide to Disability Awareness"
- [www.aep-arts.org](http://www.aep-arts.org)—The Arts Education Partnership features links to arts learning organizations and research
- [www.chadd.org](http://www.chadd.org)—Children and Adults with Attention-Deficit/Hyperactivity Disorder
- [www.health.gov/nhic](http://www.health.gov/nhic)—National Health Information Center
- [www.nacdd.org](http://www.nacdd.org)—National Association of Councils on Developmental Disabilities
- [www.naric.com](http://www.naric.com)—National Rehabilitation Information Center
- [www.cec.sped.org](http://www.cec.sped.org)—Council for Exceptional Children
- [www.nichcy.org/kids](http://www.nichcy.org/kids)—Zigawhat! The National Information Center for Children and Youth with Disabilities (NICHCY) site for kids with information on various physical disabilities and learning styles
- [www.maa.org](http://www.maa.org)—The Mathematical Association of America
- [www.pbs.org/parents/issuesadvice/inclusivecommunities](http://www.pbs.org/parents/issuesadvice/inclusivecommunities)—PBS Parents has information for parents about creating inclusive communities
- [www.teachervision.fen.com/page/2972.html?detoured=1&for\\_printing=1](http://www.teachervision.fen.com/page/2972.html?detoured=1&for_printing=1)—"Keys to Successful Inclusion—Including Students with Disabilities in General Education Classrooms," The ERIC Clearinghouse on Disabilities and Gifted Education, 1993.

##### BOOKS

- Garland, T. & Kathleen Engelberg. *Fascinating Fibonacci's: Mystery and Magic in Numbers*. Dale Seymour Pub., 1986.
- Garland, T. & Joan Gideon. *Fibonacci Fun: Fascinating Activities with Intriguing Numbers*. Dale Seymour Pub., 1997.
- Smith, R. *DK Art School: An Introduction To Perspective*. DK Publishing, Inc., 1995.

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1 "The Creative Spirit: VSA arts in Action." Vol. 11, Issue 1. 2006. Available online at: <http://www.vsarts.org/x519.xml>

2 "Frequently Asked Questions on Inclusion," The ERIC Clearinghouse on Disabilities and Gifted Education provided in partnership with The Council for Exceptional Children, found online at [www.teachervision.fen.com/page/2942.html?detoured=1&for\\_printing=1](http://www.teachervision.fen.com/page/2942.html?detoured=1&for_printing=1)



**Lifetime Learning Systems, Inc.**  
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# Let Your Style Take Shape

#### COMPONENTS

- This four-page teacher's guide
- Four reproducible student activities
- A wall poster
- A program evaluation form
- An educator's reply card

#### INTENDED AUDIENCE

The activities have been designed for students in grades 5 through 8. The topics are engaging, and the activities can be easily adapted to meet the needs of your students.

#### PROGRAM OBJECTIVES

- To provide educators with tips for creating inclusive educational environments
- To use the arts as a teaching strategy for presenting various curricula topics
- To encourage collaboration among math, art, and special education teachers to integrate their lessons in order to reach students with varied learning styles and abilities
- To provide cross-curricular lessons that meet the following national standards:
  - Math
    - Understanding patterns, relations, and functions
    - Using visualization, spatial reasoning, and geometric modeling to solve problems
  - Visual Arts
    - Choosing and evaluating a range of subject matter, symbols, and ideas
    - Reflecting upon and assessing the characteristics and merits of their work and the work of others
    - Making connections between visual arts and other disciplines
- To introduce students to artist Kong Ho, his life and work
- To provide a way for students to gain self-confidence and success in working with challenging subjects

#### DEAR EDUCATOR,

Every day you encourage your students to do their best. To help them succeed, you strive to create an inclusive environment that supports their individual learning styles and diverse needs. The stage you set can help students find their strengths—which is important to their growth, development, and self-efficacy. Many students find their strengths and success through the arts.

*VSA arts* is a nonprofit organization dedicated to providing educational opportunities through the arts for children, youth, and adults with disabilities. As part of its effort, *VSA arts* educates the public about people with disabilities by illustrating the valuable contributions they make to our communities. *VSA arts* does this through encouraging best practices and creating awareness. The desired result is the recognition, appreciation, and inclusion of diverse individuals into society—much like the community a school aims to create.

In addition to their own importance, the arts can be used as a teaching strategy. To encourage teachers to use the arts as a teaching tool with students with varied abilities, and to help students gain self-confidence, *VSA arts* teamed up with Lifetime Learning Systems to create this educational program, **Let Your Style Take Shape**. The program introduces students to visual artist Kong Ho, his work, and his disability. The imagery in Kong Ho's work is influenced by his interest in patterns found through math and science. Students can use his artwork to further explore the many places math can be found in nature. They will then use this knowledge to create their own designs.

According to Secretary of Education Margaret Spellings, "In many instances, we've seen combining music, art, and dance with teaching subjects such as math, reading, and language can be highly effective. Since every child learns differently, it's important that we continue to integrate these more creative learning methods because they obviously have a positive impact for many children."<sup>1</sup> This program will reinforce this message and apply it to students with special needs.

Sincerely,

Soula Antonioui  
President  
*VSA arts*

Katy Dobbs  
Editorial Director  
Lifetime Learning Systems®, Inc.  
*A Division of Weekly Reader*

## GETTING STARTED

Schools are filled with students who have diverse needs, skills, and abilities. It is likely that you and your colleagues have different skills and interests as well. Yet, you have a common goal—to educate your students and help them succeed. In order to maximize your ability to reach and teach students with special needs, it might be helpful to work collaboratively with your colleagues to create cross-curricular lessons involving art, math, and special education.

If you already teach in a collaborative environment, talk to your colleagues to see how you might integrate these art and math activities into your lesson plans. If you teach your subject area without much cross-over into other disciplines, speak with your colleagues to explore the option of working collaboratively. Each faculty member can share teaching strategies from his/her area of expertise in order to meet the individual needs of your students.

## HELPFUL TIPS FOR AN INCLUSIVE ENVIRONMENT

Research shows that inclusive classrooms can be beneficial for students with disabilities, as well as their classmates.<sup>2</sup> One factor that is vital to this success is the educator's comfort level for teaching students with special needs, including physical, emotional, or learning disabilities. Since the term "special needs" encompasses a wide array of abilities and concerns, it is important that educators work together to research strategies that are specific to each individual student. The simple tips listed below may help you maintain an inclusive classroom and create a setting for success.

### ACTIONS SCHOOLS CAN TAKE

- Educate yourselves about the needs of your students so that you feel confident that you are doing all that you can to help them succeed.
- Keep lines of communication open between parents, specialists, and the school faculty so that you can determine and implement the best strategies to meet the needs of your students with disabilities.
- Work collaboratively with special education teachers and other specialists when planning lessons to problem solve and determine the best strategies for presenting the curriculum.
- Organize team meetings to review and discuss the progress of students with special needs to ensure that the strategies in place are working.

### GETTING PREPARED

- Ask your students questions instead of presuming that a prescribed strategy will work best for them.
- Encourage students with disabilities and special needs to give you feedback on what works for them and what does not.

- Work with students with physical disabilities to understand their capabilities and determine if your classroom and resources accommodate their needs.
- Speak to your principal if you feel that special training is needed to work with certain students more effectively.
- When starting new materials or activities, learn what background knowledge and language skills are needed and determine your students' understanding of this information. Preview materials with students who might need it so that they are prepared and can feel confident when the lessons are presented.
- Determine what modifications you may need to make to a lesson in order to reach all students.
- Create realistic goals and assessments that account for the special needs of students so that they can demonstrate what they have learned.
- Provide choices when possible so that students can select the option with which they feel most confident.

### IN THE CLASSROOM

- Be empathetic and not judgmental. Instead of telling students to try harder, let them know that you will work together to figure out better strategies for them to learn and be successful.
- Encourage all students to try their best. If they are hesitant and cannot answer questions immediately, provide some time for them to think about their answers and come back to the topic.
- Create class rules about how students should treat each other to ensure respect.
- Give concrete instructions and ask students if they have questions. For students who have difficulty, ask them to repeat the directions back to you discreetly.
- Be aware of any environmental distractions that may interfere with your students' concentration.
- Encourage peer tutoring when possible. This can boost students' self esteem and socialization skills.
- Group students for different activities in order to create a cooperative learning environment.

An inclusive classroom can be beneficial for many students and can help prepare all students for the outside world. However, it may not be the answer for all young people. It is important to keep communication open and continually monitor each student's performance.

## THE POSTER

The poster features a painting by artist Kong Ho. After reading an interview with Kong Ho in Activity One, students will discuss this painting in Activity Two. We suggest that you laminate the poster and hang it in a visible location in your classroom.

## STUDENT ACTIVITIES

### ACTIVITY ONE: MEET THE ARTIST

This activity introduces students to Kong Ho, a successful artist with a disability. Mr. Ho is a renowned artist who creates abstract paintings, drawings, and murals. Kong Ho was paralyzed at the age of one due to polio. By appreciating Mr. Ho's accomplishments, students can be inspired and adopt an "I can do that" attitude.

Copy and distribute the activity sheet to your students. After reading the interview, ask students for their reactions to the information. You might ask:

- *Based on what you have read, what would you expect to see in Mr. Ho's paintings? In his murals?*
- *What kind of challenges do you think Mr. Ho faces as an artist?* Kong Ho responded to this question: "I believe that I share one of the same concerns and challenges that most artists must face, which is the problem of producing art that fills a personal need while still having time left to earn a living. There are many ways of earning a living through art. In addition to earning money from the murals that I am commissioned to paint and the paintings that I sell, I also teach art full-time which demands a lot of time. Finding time to work in my studio can often be a real challenge."
- *How would you describe Kong Ho?*
- *Why do you think we are reading this passage?*

Students should come away from this activity understanding that Mr. Ho is an accomplished artist whose physical disability has nothing to do with his skills or success. Encourage your students to recognize that we all have different skills and abilities—we are all good at some things and not others. It is important to figure out our own strengths in order to explore them, and to determine our weaknesses in order to compensate for or to overcome them.

### ACTIVITY TWO: IS THERE MORE THAN MEETS THE EYE?

The goal of this activity is to reinforce your students' understanding that just as artists have different styles, people interpret artwork differently. Likewise, we all have different skills, strengths, and learning styles.

Copy and distribute the activity sheet and draw your students' attention to the wall poster included in this program. The poster features Kong Ho's painting Copper Wings & Yellow Spiral. Provide your students with time to complete the questions on the page independently. If you have students who are visually impaired, ask other students to provide an audio description of the painting. Once done, reconvene and review the group's responses. Point out the various interpretations that are given.

Share with your students that when asked to describe his painting Copper Wings & Yellow Spiral, Kong Ho responded: "I would

classify my painting as an abstract work that is meant to be nonrepresentational in the sense that it is not about a specific place or time. Although I do not want the viewer to recognize a picture of anything specific like a person, place, or thing, there are still a few real-looking elements in my work that help the viewer understand and relate to my works in a way that is mysterious and dream-like."

### ACTIVITY THREE: SHAPES AND NUMBERS BEYOND YOUR MATH BOOK

This activity provides a brief introduction to the mathematical concept of the Fibonacci sequence introduced by Kong Ho in his interview. Fibonacci was a mathematician who developed a numeric sequence. (See activity sheet for formula.) As it turns out, the numbers in this sequence are frequently found in various patterns and elements in nature, science, and architecture.

To prepare for the activity, collect flowers, starfish, shells, plants, cross sections of seeded fruits, and leaves to create a tactile learning experience in which students can observe Fibonacci numbers found in nature. Likewise, you may wish to gather pinecones (preferably closed), pineapples, or artichokes so that students can look at examples of spirals. Students will also need graph paper, pencils, and compasses for this activity.

Copy and distribute the activity sheet and read it with your class. The activity explains that patterns consisting of the Fibonacci numbers can be found in nature. Using the materials mentioned above, have students count the number of petals, seeds, etc. to determine if they are Fibonacci numbers. Using pinecones, artichokes, or pineapples, have a group of students count the number of spirals that go from the bottom to the top. There should be two sets of spirals going in opposite directions, and the number of spirals as well as the number of "petals" should be Fibonacci numbers. Ask students why they think plants form spirals (to maximize space and/or for protection).

Then, following the instructions on the page, the students should create a spiral on graph paper. Students might work independently to complete the spiral, or pair up students if you have some who are stronger at reading sequential directions than others. For students who have difficulty with small motor skills, you might partner them with classmates who have stronger motor skills, or have available to the class larger graph paper that might be easier to use. Point out to your group that the numbers used in creating the spiral are Fibonacci numbers.

