Math plus art equals success

Picture Sonia Helton in the 1960s and you would see an artist in stretch pants and oversized men's shirts, her paint brush sketching out neon-colored squares and rhombuses that connect to form one gigantic diamond.

Op-art. Helton was hooked on it, and she used it to her advantage. This artist has since parlayed creative arts into solid contributions in mathematics.

If you don't think this adds up, try again. Helton will tell you art plus math equals a successful way of teaching children problem-solving skills in mathematics. It's called creative math, and Helton finds it changes established, fearful attitudes children have toward learning ghastly geometry and dreaded decimals.

Her theory has shaped her long career as an educator who once wrote and illustrated children's stories about talking chickens and scavenger cows and now writes school text books on creative math for the primary grades.

"Math traditionalists say math and art don't mix, like water and oil," says Helton, a professor of childhood education at USF St. Petersburg. "But I think like a Greek — the mother of all arts is mathematics."

Math is beautiful, she says, and she teaches youngsters to appreciate it by turning matriculations from an arduous, often despised task into a game-filled adventure.

"You don't have to be afraid of mathematics, you can have fun with it."

To show how fanciful it can be, she wrote an idea book containing nearly 200 classroom bulletin board displays that help teachers of grades kindergarten through six reinforce basic concepts in math. The book is used in classrooms throughout the United States and Europe.

See MATH, Page 2

U.S. Geological Survey's Center for Coastal Geology dedicates new home

The U.S. Geological Survey's Center for Coastal Geology dedicated its new home, the 64-year-old Studebaker Building, June 12 on the USF St. Petersburg campus. Hundreds of people toured the newly renovated building during the open house that followed the private dedication ceremony. A team of nine government scientists is studying coastal erosion and pollution and underwater mineral resources at the coastal research center, and the USGS plans to increase its St. Petersburg staff to 30 within the next five years. The USGS works in cooperation with USF's Marine Science Department, designated by the Board of Regents as a "Center for Excellence." Dr. Robert Halley heads up the advance team of USGS scientists which is studying coastline erosion along Lake Michigan and the Gulf Coast of Louisiana. The first project USGS and USF scientists will collaborate on is a study of Indian Rocks Beach to determine the effectiveness of beach renourishment.

USF President Francis Borkowski was one of 11 speakers to dedicate the Center for Coastal Geology. Behind him, from left are State Rep. Peter Wallace, Dr. Robert Halley, chief, Center for Coastal Geology, Dr. Peter Better, chairman, USF Marine Science Department.
The colorful boards combine art activities with math problems — calculating fractions, for instance. How do it painlessly? Helton suggests an imaginative wall banner that looks like flowers but actually advertises a set of simple fractions. The children cut out the flower design from felt or construction paper that represents fractions. Along with the wall hanging, the children must portray their artwork in fraction sentences: 1/3 of my flowers are red; 3/3 of my stems are green; 3/6 or 1/2 of my leaves are yellow; my yellow is ___ less than my green.

There's no room in her techniques for rote learning and the endless drilling of mechanical skills. Instead, she focuses on solving problems and applying math to real-world problems.

"Art is very visual and it can be used to represent concepts," she says.

Helton removes the mental blocks toward math by making the subject too hard to resist. The addition sentence, 3 plus 5 equals 8, is a lot more approachable if children glue together three cereal boxes, then five, and eventually combine them all. Helton guarantees the creation gives children a solid understanding of addition while getting an important environmental message across, too.

And few children would pass up a chance to learn algebra by making a mobile — provided the equal sign acts as a balancing string.

She challenges education majors more through creative journal keeping, an activity that stimulates students into working out a problem artistically. "Problems can be solved through illustration," she says.

How to choose the right puppy when puppy shopping? One education student of Helton's met the challenge to teach reasoning skills by using cartoon Snoopy characters for an example. She proves the fact-gathering process and weighing criteria for a dream dog is a snap is children consider what Charlie Brown would ask: Will this dog be my best friend? Will this dog kiss Lucy and make her scream? Will this dog steal Linus' blanket?

One resourceful student taught bases and conversions in the number system using inventive Martian symbols of squiggles and triangles to determine how Melvin, a gas station mogul on Mars, should charge his earthling customers for rocket gas. If Melvin wants to charge $6/\Delta$ craggles (Martian for cents), how many cents a gallon is Melvin's gas?

USF student Toni Booth used "strange number faces" to teach children to recognize numbers:

Two, when I see a swan going for a swim,

On occasion I see a two, inside of him.

Three, if I look closely at a three,

It looks like a horse that lives in the sea.

Four, don't go away for I must discuss

How a four resembles a cactus.

"They can solve these problems any way they want to so long as they do it visually and come up with the right answer," says Helton.

Meanwhile, Helton's artistic abilities caught the attention of the Minnesota Mathematics and Science Teaching Project (MINEMAST), an arm of the National Science Foundation.

MINEMAST commissioned Helton to write and illustrate children's stories that taught math concepts. Since the project called for more than just her working knowledge of high school math, she was tutored by such math gurus as Zolton Dienes and Paul Rosenbloom, geometrist Seymour Schuster and physicist Robert Kadesh.

She also designed art projects for the same purpose — "Something more creative than straightforward pencil and paper tasks."

Op art fit the equation.

Helton found the colorful geometric patterns were a natural for teaching children math skills while dazzling them with the illusion of wavy motion. She created a
Something fishy going on in St. Petersburg

By JANET WILKOF

Peter Betzer has a fish story to tell, but it's no exaggeration — the Pier Aquarium really does boast some remarkable displays.

"When you walk into this aquarium you really have the feeling that you're under water, that you've entered the ocean," says Betzer, chairperson of USF's Marine Science program and a board member of Pier Aquarium Inc.

Indeed, the bluish lighting in the facility on the second floor of the Pier, an arcade of shops and restaurants which sits over the waters of Tampa Bay near downtown St. Petersburg, creates an appropriately aquatic atmosphere. Scanmural, 35 mm photography blown up to life size (8 feet by 10 feet), simulate the feeling that one is walking shoulder-to-fin with marine life. As visitors head toward a back wall, they stare straight into the whiskered, mounfully sweet photographed faces of two manatees.

The 2,000 square foot facility is comprised of three major aquaria that include a sports fish tank, a coral reef exhibit with tropical fish from the Caribbean and the Bahamas and a tank called Denizens of the Deep, which contains such marine animals as a deep sea shark and Golden Crab. This crab lives 800 to 2,000 feet below the ocean's surface near Florida's coast.

Four video displays offer information on manatees, coral reefs, hydrothermal vents that spew hot water and build metal sulfide deposits and the incredible life forms that live in the deepest parts of the ocean. The centerpiece of the aquarium is the lucite tubular display that starts on the first floor of the Pier and extends up to the second floor, which houses the main display. There are three tubes. Two house fresh water fish, and in the largest one — it's 18 feet tall — swim saltwater fish.

"As you walk into the Pier, the first thing you see is this incredibly beautiful display," Betzer says. He predicts that the display will eventually qualify as a landmark in St. Petersburg. Its popularity is already evident. The colorful, fishfilled tubes attracted an admiring crowd on a recent weekday morning. Visitors stopped at the railing that surrounds the tubes to ogle, point and snap pictures of their contents.

"After the dedication of the tubes in March we came down at midnight when the place was closing, and people were just standing there gawking at this beautiful display," Betzer says. "Visitation has exceeded anything that we predicted. We figured maybe we would get a quarter million people this year. But we've had over 300,000 in six months. And it looks like by the end of the year 700,000 people will have visited the little 2,000-square-foot facility on the second floor."

The $350,000 bill for construction of the aquarium was covered by donations from the Barger Company, St. Petersburg Times, Florida Progress and Chase Banks. The Pier is owned by the City of St. Petersburg, and run by Bay Plaza Corporation. The aquarium, however, is managed by Pier Aquarium Inc., a group of private citizens and interested scientists from a variety of laboratories and institutions. Two of the board members are USF faculty members — Betzer and Dr. Norman Blake. Other board members include an extension agent from the University of Florida Sea Grant, a Pinellas County school system administrator, a former IBM executive, an aquarium specialist, fisheries scientist from the national Marine Fisheries Service, and representatives from the Department of Natural Resources.

"It's really a very diverse group of people, all of whom have taken an active role in trying to promote the whole facility," Betzer says. "And we're indebted to both Bay Plaza and the City, who were really cooperative about getting this thing going. For instance, there's supposed to be rent associated with a facility on the Pier, but the rent in our case is being forgiven because their feeling is that we're bringing people to the restaurant and to the shops."

"The Pier Aquarium was a great example of the cooperation between the state, and the city and the private sector. It's a great example of how, if the different groups work together, you can really do something remarkable. It took more than putting together great displays."

The displays, however, are what the public comes to see. Board members and students were responsible for determining what the aquarium would exhibit.

"It's a collection that has been gathered from all around the United States," Betzer says. "What you see there you have to go many, many miles to find."

USF's connection in the nation's marine science community allowed for the acquisition of a good part of the displays, Betzer says. The Monterey Bay Research Institute provided video from the Deep Diving Submersible, and the Oregon State University Sea Grant Service provided video from Alvin from Woods Hole, Mass. The Golden Crab exhibit is the work of doctorate student Rob Erdman, who is doing his thesis on the reproduction and habitat of the Golden Crab. Rick Marot, the creator of the tubes, lives in Sarasota and he went to the Bahamas to get fish for the tanks. The Department of Natural Resources provided many of the specimens in the sporting fish tank.

In Betzer's eyes, one of the best aspects of the aquarium is the involvement of USF graduate students.

"The students are the most important component in making it a very special educational facility," he says. "They are an essential resource. At all times, there are at least two of our graduate students there so when the public comes in and they're looking at the displays, the people who introduce them to coral reefs, to Golden Crabs, to manatees are people who really

See FISH, Page 6
series of four posters that look like op-art but actually teach preschoolers, kindergarteners and first-graders about shape, color and symmetry.

Symmetry and patterns became her specialty; paint, color and design were her personal math symbols. Helton formed her international reputation on how children can learn math through these visuals. For 10 years, the posters were used widely in school systems.

True mathematicians think like artists, "always inventing and looking for new structures, making associations and analogies," she says.

The new, creative curriculum never took hold, largely because "people lacked an understanding of its purpose and direction," Helton says. A strong push from the conservative right in the mid-70s sent children and curriculum "back to the basics."

Only recently have educators recognized children need to be taught cognitive skills — investigation, estimation and reasoning — so they can solve whatever problems they encounter.

She puts it simply, "We're not producing enough creative mathematicians in this country."

Study after study proves this point. American students lag dismally behind their foreign peers in math and science knowledge, sparking national debate about the failures in American education.

"Children just do not have the problem-solving skills they need. I've been saying this all along.

"People are now finding out children need much, much more than the basics. They need to know how to think, not just how to respond."

She says that's what the arts have to offer math — the creative problem-solving skills artists have. "Artists have always viewed problems from a problem-solving aspect."

But most people never have grasped the necessity of integrating math with science and making the connection with creative kinds of thinking and the arts, she says.

Math is a language in itself, and it must be understood. Helton makes it fathomable.

"I know from my work that established attitudes toward learning math can be changed and achievement will improve."

At the Sun Coast

Where they advertise the stars, from great places like Hollywood and even Las Vegas, little petitioning waves out back list all night introducing their lost inextricable client

The Gulf of Mexico: The Gulf listens.
Pelicans converse along just above the surface. Timidly a gull the noon time
where the lace of the waterline frills among panels.

The sky makes it all old, a boundless procession
of new hours flow in from the east
while we speakers, impersonating the human race
make shadows grow large wherever we turn.
Was it Saint Peter who tried to walk on the water?

Anyway, he was impressed. At Saint Petersburg
we walk on The Sun Coast; then we look up and before
the big dark we skip away just ahead of the waves.

Internationally known poet William Stafford composed this poem during the 17th Annual Florida Suncoast Writers' Conference, held on campus in late January. Stafford won a National Book Award for his collection of poems, Traveling Through the Dark, and was poetry consultant for the Library of Congress. His poems have appeared in such periodicals as Harpers, New Yorker, Nation, Yale Review and Virginia Quarterly.

Stafford at work on his ode to St. Petersburg.
Mom graduates USF St. Petersburg in time to attend 20th high school reunion

Nearly every night these past two years, Lynn Cadogan and her 12-year-old son, Kelley, would sit side by side at the kitchen table doing homework together.

But Lynn wasn't coaching her son on his homework. She'd be doing her own — everything from writing methods to lesson plans.

Lynn, 37, finally got her degree in elementary and early childhood education from the University of South Florida St. Petersburg. In fact, the scholarship-winning mom graduated with honors — just in time to attend her 20th high school reunion.

"I don't like to do less than my best, so it's really satisfying to win awards," says the straight-A student. "But it's almost embarrassing."

But Lynn is fairly typical of the students at USF St. Petersburg. Most are older, have families, go to college and work. They're also likely to remain in the local community after they graduate, as Lynn plans to do.

Lynn returned to college after an 18-year absence. She attended Glen Ellyn (Ill.) Junior College for two years, studying art and education. Then she met her husband, Jim, and college took a backseat to marriage.

"I felt like I was spending a lot of time with other peoples' kids, when I wasn't spending time with my own."

With the demands of the College of Education program, time became much more critical to Lynn. She started her days at 5 a.m. and was the last one in the family to go to bed, but the household chores piled up. "A clean house, you don't have. Clothes that need to be washed, aren't," she says. "Something's got to give and it's usually family life — that's what happens when moms go to school."

Her husband took over a lot of family duties, such as chauffeuring their children to school and other activities. The children came to rely more on Jim and had to discipline themselves not to interrupt their mom when she was studying. "They say you learn things better in small chunks. Because of the interruptions, I've had lots of small chunks."

But the family cheered Lynn's efforts. "They all deserve diplomas," she says.

Lynn plans to seek a teaching job in Pinellas County. She is certified to teach kindergarten through sixth grade. She graduated with a network of friends with children who have returned to college to prosper professionally.

"Go on an adventure. Explore USF"

Give back to alma mater, says graduate

By Hilary Thomson

As May approaches, the thoughts of life as a college student become somewhat retrospective instead of current. Graduating from USF St. Petersburg is difficult — not just because of its academic excellence and the fact that it's a fun place to go to school. It's difficult because after you've gone to school here and worked here, it's as if you've been inducted into a close-knit family that really cares about you. They're an understanding bunch of people, these faculty, staff and students. They care about your progress and they congratulate your efforts. They let you know when you're doing well and when you need to try harder. They impart a sense of "We're all in this together." Maybe that's why it's so hard to leave, and why it's such a great place to go to school. It instills in the individual a sense of wanting to give back something to a place that has given so much.

Graduating means closing a significant chapter in a student's life. It also means opening a new door. If the door to life opens as easily and as welcomingly as USF St. Petersburg's door did we would all be a little luckier. Maybe it doesn't, maybe it does. But either way, those who have passed through the intimate atmosphere of USF St. Petersburg will be better prepared. Those who haven't should investigate. Go on an adventure. Explore USF.

Those who want to explore will be pleasantly surprised. This place is not empty academic walls, it's a place of learning. It's also a place to grow. It's a place of which I'll continue to be proud. And like so many others who have made this such a uniquely special place, I will give something back. First, I will accomplish what I set out to do and graduate. Then I will take my own medicine, listen to my own advice and explore USF. By that I mean explore what I can do to help USF, and dare to give back just a little of all the wonderful things USF has given me.

"Congratulations to all my fellow graduates. Good luck in walking through that big door of Real Life. And remember, good ole USF St. Petersburg will always be there, getting better and better. And just possibly you will explore how you can make a significant difference in your alma mater."

Good luck graduates!

Hilary Thompson, 24, wrote this column prior to graduating from USF St. Petersburg in April. While earning her bachelor's degree in English, she worked part time in the Student Government Office.
Andrew Hines, chairman of Florida Progress Corp., received an honorary Doctor of Humane Letters degree from USF St. Petersburg at the April 30 commencement. Hines was recognized for his community involvement and his commitment to higher education, particularly USF. President Frank Borkowski, left, conferred the degree.

Deborah Mobley graduated from the College of Education.

FISH from page 3

know something about them. In fact, they are probably the best experts in the community. People who are going for master's degrees and Ph.D.'s in marine sciences are out there actively educating the public that goes through as well as the school groups and tours. Anyone can put up colored, beautiful fish. But to provide the context in which people understand how they live and what they do and what they mean to our environment, is an exciting concept.

"The students make the aquarium special."

Betzer welcomes the opportunity to showcase the Marine Science program. The program, he says, attracts students from all over the country. And the aquarium is an ideal means of showing off this talent.

"Normally students are in front of computer terminals, or in laboratories or they're in the library. That's great. But they need to utilize and apply the knowledge they have," Betzer says. "And it's good for the community. The graduate students can help kids with science projects, they can help teachers who want to enrich their program. It's an outreach program. The students are the perfect people to transmit excitement for marine science.

The aquarium is not used by USF students for research, although Betzer says some unexpected and amazing events have occurred.

"One of the golden crabs molted, and we're not aware that anyone has ever seen one of the deep sea crabs molt. We also saw them mate. And that's never, as far as I know, ever been seen. The public, the students and the scientists got a chance to see that and we all learned by it. However, not too much of that kind of thing is probably going to happen."

The aquarium is open from 10 a.m. to 8 p.m. Monday, and Wednesday through Saturday, and noon to 6 p.m. Sunday. It is closed on Tuesdays. Admission is free, but a $1 donation is suggested.
News Briefs

Stirling Named Interim Chairman

Professor Hamilton Stirling, coordinator of the College of Business on the St. Petersburg campus, recently was named acting department chairman of Information Systems and Decision Sciences in the College of Business. ISDS is a growing department that provides the necessary skills for positions in information systems and production management in business and public organizations. Its faculty, characterized by 15 well-qualified professors bent on teaching and research, are spread over five campuses.

His post begins Aug. 8. Meanwhile, USF will conduct a national search for a recognized scholar to permanently head up the department. Stirling, 51, will mark his 20th anniversary with USF in August. He holds a MBA from Rutgers University and an engineering degree from the University of Pittsburgh.

Library Director to Assume Post in Washington, D.C.

Sam Fustukjian, director of the Nelson Poynter Memorial Library, was recently named project director of Access ERIC (Educational Resource Information Center).

Though the Department of Education has funded ERIC since 1969, Access ERIC is a new program contracted out to Aspen Systems Corp. of Rockville, Md., as part of the federal government's effort to privatize some of its services.

ERIC comprises 16 clearinghouses that publish reference and referral indexes of all education-related publications in the country for libraries and private companies. Fustukjian will take a one-year leave of absence to head Access ERIC, and synchronize the activities of the clearinghouses. His theme for the year will be "Access -- a noun and a verb."

USF-St. Petersburg Student Wins Florida Historical Society Award

A history paper written about former Florida Gov. LeRoy Collins won USF student James Schnur the 1989 President's Prize from the Florida Historical Society.

In "LeRoy Collins and Legislative Interposition: A Portrait of Emerging Moderation in Gubernatorial Politics," Schnur traces Collins' 6-year term as governor (1955-1961), and his evolution from a moderate segregationist to a proponent of integration. Schnur argues that Collins' leadership and stance toward integration made Florida a racially tolerant state, despite resistance by the Legislature and reaction by other Southern states against the 1954 U.S. Supreme Court decision which ruled unconstitutional state-enforced school segregation.

Schnur, a 23-year-old history major, is a graduate student at the USF St. Petersburg campus. As a result of his project, he and Collins will soon meet for the first time.

76 Percent of USF St. Petersburg Accounting Graduates Pass Nationwide CPA Exam on First Attempt

Nine of 16 USF St. Petersburg accounting graduates who passed the CPA exam on their first attempt. Top row from left are Joanne Howard, Chris Burton, John Jewell, Brenda Williams and Paula Popovich. Bottom row from left are Jeh Mohr, Kevin Burkhart, Greg deCosmo and Timothy Bronzo.

Sixteen of 21 recent accounting graduates of USF's St. Petersburg campus passed their CPA exams on the first try. Nationally, about 20 percent of first-time candidates pass all parts of the test they take.

The test, given twice a year, was administered by the American Institute of Certified Public Accountants in November to 74,000 candidates from across the country.

One reason the graduates did well on the test is because of the accounting faculty at the St. Petersburg campus -- a good mix of full-time, research-oriented professors and adjunct professors who work in the accounting field, says Hamilton Stirling, coordinator of the College of Business and interim department chairman of Information Systems and Decision Sciences. As a result, students get solid theoretical background and the applied training needed to pass the test the first time around, Stirling says.

In 1987, Alexandra Bolton, an accounting major from the USF St. Petersburg campus, achieved the highest score in the United States on the CPA exam.

In November 1986, USF ranked fifth in the passing rate for first-time candidates without an advanced degree who took the CPA exam, and second in success of first-time candidates who passed all subjects.
The ways you can help USF St. Petersburg

By Ralph L. McKay, director of development

Most people would like to make a gift to a university, but sometimes feel that the only kind of gift possible is money.

While monetary gifts allow a university like the University of South Florida at St. Petersburg to put those resources to immediate use, deferred giving by an individual also has a significant value.

Deferred giving means setting a point in the future, either retirement or death, at which time the gift you pledge goes to the university.

One easy way to make such a gift without a whole lot of expense is a gift of life insurance.

BENEFITS AND ADVANTAGES

1. GENEROUS GIFT FOR A MODEST OUTLAY
   A gift of life insurance is an excellent way to make a substantial meaningful gift for a modest annual cash outlay. For example, just a few hundred dollars a year in premium payments can often purchase a $100,000 policy. Yet $100,000 earmarked for our endowment or similar purposes would be a significant commitment to our future. Keep in mind, too, that many of the newer insurance products require that premiums be paid for only a period of perhaps eight to ten years, after which time the insurance will continue in force with no additional premium payments.

2. TAX LAWS MAKE IT EASIER
   Through the charitable income tax and estate tax deductions, Congress encourages philanthropy. If appropriately structured, a gift of life insurance qualifies for these deductions. For example, if you name us as the owner and beneficiary of an existing policy, you will receive a charitable income tax deduction for the value of the policy contributed. In addition, you will receive a charitable deduction each year for the continued payment of premiums.

3. A WAY TO CONTINUE GIVING
   If you are currently making annual contributions to us and would like for these contributions to continue beyond your lifetime, you may wish to consider a gift of life insurance. Through naming us as the owner and beneficiary of a policy (or even by naming us as just the beneficiary), the proceeds from the policy could be used to endow your annual gift for many generations to come. What easier way is there to make a lasting gift?

If you are interested in any of our brochures on deferred giving, including "Gifts of Life Insurance" write to me.

Send your letter to: Dr. Ralph McKay, University of South Florida, 140 Seventh Avenue S., St. Petersburg, FL 33701.