

**TEACHER IN SPACE-25<sup>TH</sup> ANNIVERSARY**  
**May 22, 2010**

*The Teacher in Space Program was announced in 1984, with Christa McAuliffe selected in 1985. Art Kimura, who directs the Future Flight program, and Joe Ciotti of Windward Community College were Hawaii's two candidates. Here are interviews with both.*

**ART KIMURA**

What got you interested in space long, long ago?

As a child, I loved the old Buck Rogers movies and have been a science fiction fan for many years including the more recent Star Trek and Star Wars programs. I have grainy black and white photos of my black and white TV screen during the 1st moon landing of Apollo 11, while serving on active duty in the United States Air Force at Gunter Air Force Base, Alabama, and like many others throughout the world, I was awed by the idea that humans could step foot on another world.

Did you like science – were you a science fiction fan – was it watching NASA's early achievements?

I grew up on/near the ocean so the idea of becoming a marine biologist was always my goal...the other goal was to become a fighter pilot. Both directions changed in college....during an Air Force ROTC physical, finding out my right eye was 20/25 and no 20/20, did not qualify me for pilot training; and a course in invertebrate marine biology literally got me to re think marine biology (the lab work being too mundane). The possibility of teaching had never entered my mind until I thought about what I could do with an undergraduate degree in zoology. It was not until my student teaching semester that I understood and became passionate about wanting to be a science teacher, having an incredible mentor as a cooperating teacher, at McKinley High School.

How was STEM back then? Did you have to take the initiative to learn on your own? How did you go about learning about space?

I recall that during my 9th grade year taking biology, we only had two hands on lab experiences that I could recall. There were no indelible memories of my high school physics or chemistry but I remember them being positive experiences. There were no advanced placement courses in math or science and social clubs vs. science clubs were more of the norm. It was emphasized in our family that high school completion was not the goal but merely a transient point toward going to and completing college; with both of my parents having to stop their schooling in 8th grade, there was always the fundamental goal of all of us going to college. The message from my parents must have worked as all 3 children graduated from college (along with now all 8 grandchildren); we will always be grateful for that emphasis on education and being educated.

As a teacher, I always liked the hands on approach to teaching...laboratory experiments, field trips, relevant to learning. Having developed a course in which students worked at off school sites (the Honolulu Zoo, the Waikiki Aquarium, the Hawaiian Humane Society, Straub Hospital) for course credit during the school day, was a means to do so.

What did you feel were your strong points going into the Teacher-in-Space competition?

I felt that just the opportunity to apply was a great honor; to imagine that I could be standing in a line of applicants, even if thousands in the line, would be an amazing experience. Naively and incorrectly in retrospect, I felt that my Air Force experience (having been on active duty for 5 years, then joining the Hawai Air National Guard, having been given responsibilities as an officer to supervise operations including air defense of the southeastern United States and Okinawa during my time on duty, coordinating rescue and medical evacuation missions, and having worked in highly intense operational situations) and the project and experiential teaching and learning emphasis in my classes were complementary.

Please describe the intellectual/social environment that led to the Teacher-in-Space concept.

The selection of a teacher to be the first private citizen in space would have emphasized the importance of classroom teachers to the fundamental goals of education and to our nation's future along with the inspiration it would bring to teachers and students around the world.

How did you feel when the Teacher-in-Space program was announced and what made you apply?

As noted above, personally, I felt just the opportunity to apply was a privilege....the application required you to be a classroom teacher and although I am sure other occupations such as journalists, lobbied to be included, it was an honor just to turn in the application to be considered. I believe we knew that this was not to be a flight just for a teacher's personal experience and recognition, but a flight of a representative of all of the millions of hard working teachers who daily try to take students on flights of imagination, to make them reach for a dream and a larger goal in life.

What had you hoped to accomplish?

I would have hoped that given the opportunity, we could bring the unique space experiences to the students' understanding. I proposed taking everyday objects such as kitchen utensils and see how they would function differently in micro gravity. I also wrote in my application that the unique perspective of Earth from space, would be one that world leaders should experience and see...to know that there are no boundaries seen from space, that all parts of the planet are connected, that the fragility of the earth could be see through

visible signs of human interaction with the Earth and the relatively small layer of air that kept Planet Earth alive.

Please describe what the competition process was from your viewpoint.

It was an amazing personal experience to be sure; to be asked to describe your philosophy of life in a minute, while being videotaped from head to toe, to meet the other state finalists and to be awed by each had done in their teaching and in their community, and to meet the NASA officials and judging panel members, made an indelible mark on my life and career. Many of the Teacher in Space state finalists have become close colleagues and friends, even now some 26 years after we first met. While in Washington DC, we all signed on a single sheet of paper our names, knowing that one would become the selected Teacher in Space. I remember telling my life when I returned home of who I thought would be selected in the top 10 of the finalists....little did I know to be sure as none of the 10 I had in my mind, were selected in the final 10 selectees. I do recall sitting next to Barbara Morgan on one of the bus rides; today we have become great friends and colleagues. We got to meet 5 of the crew members. After Christa and Barbara (Christa's back up) were selected, we were kept abreast of their training through news letters and photos. Many came to Hawaii for the Challenger Center National Faculty Meeting during which we spent a week on the Big Island, touring the volcano, snorkeling in Kona and paying tribute to the Challenger crew at the Astronaut Ellison Onizuka Space Center.

What was the experience like for you as we anticipated the inaugural flight.

Like everyone, we were excited and in awe of what we hoped would take place; I had sent Christa a sprig of T leaf, although not optimistic she would be able to fly with it, as a symbol of good luck, that I told her I would propagate and pass out to teachers after her remarkable flight. We convened in Orlando/Kennedy Space Center with the other state TIS finalists anticipating the launch. After several delays, we were taken to the viewing area for the launch on Monday; with the countdown frozen several times and finally cancel led due to cross winds, we left thinking that they would not be launching the next day. Already late in reporting back to work (I was training to become a school administrator), we decided along with many others, to return home.

How did you feel watching it? What was your reaction following this including its effect on the space exploration program?

My family and I did not see the launch live; we were on a flight from Orlando to Chicago and while flying thinking that they had launched, there were in space, etc. Upon exiting the plane in Chicago, by coincidence, the pilot came out in the corridor and exclaimed that the Challenger had exploded; we rushed into the airport to look for a television and by then, they were playing and re playing the accident/disaster time and time again. Our first thoughts were for the families of the crew members who were there at the launch. Like

everyone else, we were stunned and saddened by the outcome of what promised to be a flight for education and for educators.

What led to your developing the educational programs that you now direct?

In large measure, if Challenger had flown successfully that day in January 1986, my path would have gone in a totally different direction; at the time, I was training to become a school administrator. The fact that Hawaii's Ellison Onizuka was on board along with the teacher, Christa McAuliffe, changed everything. We got involved in the Teacher in Space Education Foundation including serving on the board for a time, and the follow on Challenger family organized Challenger Center for Space Science Education, including conducting workshops and presentations for thousands of students and teachers, and bringing the idea of the now Challenger Learning Center to Hawaii (now located at Barbers Point Elementary School). All that we have done since 1986 is an outgrowth of the Challenger mission which we regarded as an educational mission. Christa had planned to do 12 experiments during her time in orbit. We were extremely fortunate in Hawaii as at the time, the Department of Education allowed me to do programs statewide for two years, in classrooms and libraries. The Department of business, economic development and tourism, created an Office of Space Industry, charged with looking into space related activities that included a launch capability from the Big island as well as a space camp. After having initiated taking students to space camp starting in 1987, and then over the years, taking 500 students and teachers there, I was invited to join the Office of Space Industry on loan from the DOE, to help initiate a space camp for Hawaii that we started in 1991 using the lava fields of the big island as a simulated lunar terrain and taking advantage of the solar eclipse that year. We are celebrating the 20th anniversary of Future Flight Hawaii in June 2010 with our program at UH Manoa.

Please tell about your programs.

We have been privileged to have been a part of this amazing journey in which our goal has been to inspire the next generation of explorers. Working with NASA over the past 26 years has brought space related activities to thousands of children and teachers in Hawaii. From our Hawaii version of a space camp called Future Flight Hawaii (<http://www.higp.hawaii.edu/futureflight/>), with now over 8500 participants experiencing themes of returning to the moon, a mission to Mars or a mission to our blue planet, Earth, to coordinating for 14 years statewide Department of Education space conferences (funded by the legislature since 1990), to classroom and school presentations (How to use the bathroom in space to over 150,000 children and teachers), to conducting workshops and courses for hundreds of teachers, to initiating the Astronaut Ellison Onizuka Science Day and Astronaut Lacy Veach Day some 10 years ago which brings together 1200 students and parents to learn science from community resources, to helping initiate scholastic robotics in Hawaii some 11 years ago and helping expand these programs to now over 400 teams in more than 100 schools statewide to creating international partnerships and exchanges with a STEM focus, the opportunities to meet and support teachers, students and parents has

been a joy to have been a part of (<http://www.spacegrant.hawaii.edu/Newsletter-Fall2008-forWeb.pdf>).

Anything else you'd like to say regarding STEM or astronomy.

Investing in STEM education, in ways that have accountability for resources expended, is critical to our state and nation's economic future well being, national security, and maintaining our way of life. We are trying to educate students today, not even knowing the kinds of jobs that will be created in the future; as technology evolves, we need students who have those critical life skills of problem solving, effective team work, responsible decision making and time management with innovation and adaptability to changing technologies and global opportunities. We need our students to be measured against global and national criteria, and to set the bar very high for them. Most importantly, we need to invest in gaining the public's understanding and support for STEM; why is it that hundreds wrote letters in protest against traffic cameras...and yet when news about the deplorable performance of our students in science, there are not protests and call for action? As much as we honor athletes and athletics, entertainment and entertainers, we need to honor those who excel academically and the "coaches" and "managers" who make the opportunities available to students to excel in programs that will one day lead to one of them finding the cure for cancer, or a non polluting sustainable energy source, or new industries for Hawaii. We need to have advanced STEM academies throughout our state.

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## **JOE CIOTTI**

[Windward] will be upgrading our theater in August with state-of-the-art technology which will make it the first fulldome planetarium on the island of O'ahu. The new DigitalSky2 projector system will allow audiences to experience immersive adventures in a true 360° environment, including 3D features. We plan on celebrating its grand re-opening in September.

What got you interested in space long, long ago?

When I was in elementary school, I got caught up in the fever of the Sputnik era. When I attended Fordham Prep High School in the Bronx, N.Y., I was fortunate enough to be selected for a summer internship at the American Museum-Hayden Planetarium. I've essentially been in the planetarium field ever since. I lectured at the Bishop Museum Planetarium for 25 years and have designed both WCC's Hokulani Imaginarium and UH-Hilo's planetarium at the 'Imiloa Astronomy Center.

Did you like science – were you a science fiction fan – was it watching NASA's early achievements?

Science fiction has always been a gateway to my fascination with science possibilities. The adventures of *Flash Gordon*, *Buck Rogers*, and *Star Trek* filled my dreams with space flight; the actual race of the Moon filled my aspirations to pursue a career in space science.

How was STEM back then? Did you have to take the initiative to learn on your own? How did you go about learning about space?

Actually, STEM is not a new concept. I was involved with it in high school in the mid-1960's. More recently, it's been package more cleverly to better promote the opportunities available for careers in science and technology. Branding these fields together into a single acronym has peaked the consciousness of our community to the possibilities that were actually always there. In this case, marketing has made a major impact in supporting these essential fields. Astronomy and space science are by their very nature STEM-based. I learned to integrate these areas throughout my education. As a result, when I started the Center for Aerospace Education (CAE) in 1985, I made STEM an integral part of the services that it offered to the community. Of course, the term STEM wasn't invented back then. It was couched in such phrases as multi-disciplinary and inter-disciplinary.

Please describe the intellectual/social environment that led to the Teacher-in-Space concept.

After the race for the moon was won and with the last manned mission to its surface in 1972, public and governmental interested in NASA began to wane. The space stations of the USSR (*Mir*) and USA (*Sky Lab*) didn't evoke the same excitement for exploration that the lunar missions did. By the time the first Space Shuttle was launched in 1981, the world was getting complacent with space travel. It was as if space flight had become common place. To rejuvenate interest in NASA, it was decided that the shuttle would carry common citizens into earth orbit. The first would be a teacher — to be followed by a journalist , musician and others. In fact, several U.S. congressmen had already used their clout to ride the shuttle before this program got off the ground. The idea was to show that space was accessible to everyone—the common man.

How did you feel when the Teacher-in-Space program was announced and what made you apply?

I had applied for the astronaut program prior to the TIS program, but my eyesight (although correctable) was a drawback. The TIS program was opportunity's proverbial knock on the door. I tell my students that you never know when that knock will come; all you can do is be prepared for when you open the door. In my case, I had earned advanced degrees in astronomy and education and had extensive experience in the planetarium field and high school teaching. I felt ready when the knock was heard. It seemed like a perfect match.

Please describe what the competition process was from your viewpoint.

I was vastly impressed with the high caliber of teachers that were selected from across the country. Anyone of the 113 candidate who attended the selection process in Washington, D.C. during the summer of 1985 would have made an excellent educational ambassador for promoting interest in space science. This was after all a golden opportunity to show students the connections between science, technology, engineering and mathematics as well as the careers they offered. Still not called STEM back then, but STEM nevertheless.

What was the experience like for you as we anticipated the inaugural flight.

Florida was unusually cold for the launch that January of 1986. Delays pushed back the launch date to a point where I was forced to return to Hawaii. I had many commitments. I was teaching not only at St. Louis High School, but also at Windward Community College and the Bishop Museum planetarium.

What was your reaction following this including its effect on the space exploration program?

I immediately began visiting schools across the State to talk about the dreams and aspirations of the crew aboard Shuttle 51L who perished that January morning. It was a teachable moment. It was important for focus on two important things:

- how these astronauts lived .... not how they died.
- exploration - and for that matter, all meaningful endeavors undertaken in life - involve risks.

What led to your developing the educational programs that you now direct?

After being selected as one of Hawaii's Teacher-in-Space candidates, I wanted to give back to the community. In the Fall of 1985, I established the blueprints for what was to become the Center for Aerospace Education (CAE). It was to focus as hands-on experiences in science, technology, engineering and mathematics. The plan was ambitious in calling for various outreach facilities, such as a planetarium, observatory, exploratorium and flight training simulator. Initially, the CAE involved my presenting astronomy and space science talks at K-12 campuses across the State. When I moved to Windward Community College, I received the administrative support opportunities to make these dreams a reality. I solicited funds from private individuals, foundations, NASA and other federal agencies and the State government.

Please tell about your programs.

Since its opening in 1985, the CAE has serviced over 250,000 people. Each year approximately, over 12,000 visitors take advantage of our aerospace outreach facilities. The CAE's slogan is: "The sky is not the limit. Let your imagination take flight." The Center for Aerospace Education (CAE), which was piloted in Fall 1985 and officially established on 20 October 1986, supports WCC's credit and community outreach programs in aerospace science. The CAE operates several educational facilities, which serve WCC students in astronomy, Polynesian Voyaging and other courses, as well as over 12,000 community

visitors annually. Over the years, the CAE has sponsored numerous teacher training workshops—providing support for hundreds of teachers in public and private schools.

The following facilities and services are offered by the CAE:

- **Hokulani Imaginarium** (dedicated Oct 2001) is a high-tech, multi-media facility, which functions both as a planetarium and as a specialized theater in scientific visualization. This facility serves K-12 teachers and students as well as the general public. The Imaginarium also supports the college's astronomy and Polynesian Voyaging programs. The Imaginarium will become the first full-dome planetarium on O'ahu with the installation of a state-of-the-art projector system this September 2010. For Imaginarium shows, check our web site at: <http://aerospace.wcc.hawaii.edu/imaginarium.html>

- **Aerospace Exploration Laboratory** is the flagship of the CAE. Founded in 1989, this resource center acts as a low-tech “hands-on” science exploratorium assisting K-12 students and teachers in discovering scientific principles through low-tech experiential activities.

- **NASA Flight Training Aerospace Education Laboratory (AEL)** was dedicated in Oct 2002 in partnership with NASA Glenn Research Center. This flight-simulator training facility includes a zero-g Drop Tower, wind tunnel and flight simulator. It supports WCC's Hawaii Space Grant program, the college's credit and students and teachers in grades 5-12.

- **Lanihuli Observatory** currently operates a NOAA weather satellite tracking station, a heliostat (solar telescope), a 16-inch optical telescope, a cosmic ray telescope and a radio astronomy telescope. The visitor's Gallery includes a Magic Planet interactive display. This facility supports the college's astronomy labs, Space Grants, K-12 outreach and the general public.

- **Hawai'i Space Grant Consortium (HSGC)** membership affords WCC students the opportunities to conduct aerospace science-related projects, such as zero-g research through our participation in the NASA Reduced Gravity Student Flight Opportunities Program on-board its KC-135A aircraft. Currently, WCC Space Grant students are engaged in high-powered rocketry and preparing for competition at both national and international rocketry events.