May 2nd, 2:00 PM

# Paper Session II-C - Educating the Next Generation

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# The 38th. Space Congress

## Cape Canaveral, Florida

## May 1 - 4th. 2,001

## 'Educating the Next Generation'

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# "Educating The Next Generation"

Each morning when I wake up, set about my daily chores and prepare for work, I earnestly feel that I am in a privileged position. You see, I work at the Kennedy Space Center with NASA contractor - **Delaware North.** My job description in KSC's Education Department is as follows:

**"To tell the NASA story and inspire all people to support the exploration of space".**

Our mission statement sounds quite simple, however, the work that my fellow educators and I engage in is far from that. Let me say right from the outset, I believe that **Educating the Next Generation** is one of the greatest responsibilities we face today. Scientists estimate that **the very first human to walk on Mars has already been born and is probably attending school - right here in the United States!** To meet this great challenge the questions we educators face today are many fold, but two questions are primary:

1) **Are we preparing today's youth for that historic odyssey?**
2) **Can we do better?**

I believe that the single, long-term goal for those of us who work in the space industry should be to encourage, educate and then share our dream of space exploration with today's school children. To meet this worthwhile goal, we at the Kennedy Space Center approach space education through a wide variety of space programs and activities. We have several one day programs - our **Space Patch Program** is a prime example of just one of these. This learning experience is offered to all youth, scout and school groups and families. Because of the ages of the children, our educators utilize this program to introduce our youth to space themes while holding the attention of young minds through a variety of 'hands on' activities and spurring their imaginations towards space and adventure.

We have found that children of all ages love to meet our visiting astronauts and of course our more senior groups - those who come under the **Ask an Astronaut** program, really relish the excitement and challenge of meeting face-to-face with an astronaut! However, we must appreciate that with this more senior group of teenagers, preparation is most important. Otherwise of course, valuable opportunities may be lost. With that in mind, we have introduced an **Educator's Activity Guide** which has been specially designed to brighten any classroom unit on the theme of 'space', while at the same time meeting **Florida's Sunshine State Standards** along with national teaching standards and objectives. The material presented in this Guide challenges students through problem solving and cooperative learning and exploratory hands-on activities. This material therefore prepares our teenage students for their field trip experience to the Kennedy Space Center and Cape Canaveral, where all these activities really come to life.

Our **Overnight Adventures Program** encompasses the learning experiences of the **Space Patch Program** and **Ask an Astronaut** and to add to the excitement, our students actually get to sleep - in their own sleeping bags, under a real Saturn V rocket at the Apollo Saturn V Center. For many of our students sleeping under this real 'Moon' rocket is one of the highlights of their visit!

Throughout the year, many groups of students, organizations, parents and educators arrive in Central Florida from all parts of this country to share their time with us at the Visitor Complex. Nevertheless, we believe that in order to offer a more complete program of space activities we must do better. Therefore we have prepared what we believe will be the most imaginative and

comprehensive, spring and summer programs that have ever been offered in space education! This new, weeklong program appropriately called - **Camp Kennedy Space Center,** (formerly known as **Space Scholars,**) has been enlarged to form a more complex and challenging range of activities. 'Going back to basics' is really the theme of **Camp Kennedy Space Center** and in this enhanced program, we intend to approach space education on three main fronts...
**The Past.**
**The Present.**
**The Future.**

I would like at this stage to briefly detail this exciting new space program to you and then we might consider how we might improve upon this endeavor by encouraging our fellow NASA employees and the NASA contractors to become much more educationally involved alongside us.

## The Past:

In classrooms throughout this country, school children are taught this great nation's history. They learn from their educators a love and understanding of the past, a love we trust will later fuse into national pride. We educators at **KSC** employ the same methods... This exciting, new weeklong spring and summer program called - **'Camp Kennedy Space Center'**, will take our young students back to the past, to those historic **Mercury, Gemini** and **Apollo** sites at the Cape. In these sacred locations where our early pioneering astronauts first struggled into space, our students will have the opportunity to visit and inspect the original launch sites and the Blockhouses. In the **Space Scholars** program, the questions came rapidly and enthusiastically from all sides. We expect **Camp KSC** to be no different. Here is just a sample of how these young inquiring minds viewed the past and the questions they raised:

**'Who was the first American in space?'**
**'Why are the Blockhouses so close to the launch sites?'**
**'Tell us about the monkeys in space, did they survive?'**
**'Can we look through the periscopes?'**
**'Why do we not restore those famous launch sites?'**

It's a very rewarding experience to observe the enthusiasm in their eyes as they share the past with their educators, as well as the experienced volunteers at the **Cape Canaveral Space and Missile Museum.** At the Air Force Museum, students see an actual Gemini capsule and can only marvel at the true grit and dedication of those astronauts who journeyed into space on board these vehicles. In Blockhouse 5/6, they see the original, restored equipment which heralded both Alan Shepard and Gus Grissom into space, not to mention the loveable Ham! We further explore Launch Complex's 13, 14, and 19 and tell of the 'space race' to the Moon and the determination of this nation to complete the promise made by an assassinated President of "putting a man on the Moon by the end of the decade and bringing him safely back to Earth."

In the theaters at the Apollo Saturn V Center, our students gaze with disbelief at the launch of the Apollo 8 crew when Frank Borman, James Lovell and William Anders became the first men from this planet to view the far side of the Moon. In the main Auditorium, they excitedly marvel at seeing and walking under a real **Saturn V Rocket** - the only rocket ever built that could take humans to another world!

But of course, not all our past is triumphant... At Launch Complex 34, we find our students listening intensely as we relay the events leading to the tragedy of **Apollo 1**. Educators describe how an entire nation was swept into grief at the loss of the Apollo 1 crew and then with determination, came to grips with itself in that determined effort to walk on the Moon. Those of us who cherish the immortal names of Grissom, White and Chaffee will never forget their sacrifice.

To the youth of this nantion, the tragedy of Space Shuttle Challenger is still an enormous mystery. Many of our students were born after the event! And ironically at Complex 34, the events of Challenger also comes to their minds. As educators, we can only re-iterate the great risks that still exist as men and women continue to struggle into space and how we as a nation should never take space flight for granted. None of us can change the past, we can only learn from our experiences and be even more determined that such will never happen again. I believe that the impressions left with our students will endure a long time, the past will truly live on in their young minds.

**The Present:**

In introducing our young space scholars to the present, it is here that we incorporate many of our 'hands on programs', with particular emphasis on **NASA's Space Shuttle program** and the **Atlas, Delta, and Titan rockets,** or expendable launch vehicles as we sometimes call them. In easily understood and supervised demonstrations we show our students how to assemble rockets. We explain the principal differences between solid and liquid fuels. Then, with their assistance, we convert oxygen in its original gaseous state, (trapped inside a balloon,) into liquid oxygen - simply by inserting the balloons into an ultra-cold container of liquid nitrogen. The effects are immediate and understood - our students appreciate how liquid fuels take up much smaller space than as a gas!

Likewise, the functions and purposes of the Orbiter's unique silica tiles are explained. The almost magical properties of the tiles being able to block high temperatures through re-entry; being lightweight and then shedding heat are demonstrated. We have found that educators 'armed' with a propane torch which can give out almost 2100°F, really gets the attention of all our students. There's nothing like 'fire' on stage to get our students to shout out - "Hey cool, I love this part!"

To help our students further appreciate and understand the Space Shuttle program, here of course we are very fortunate in having a wealth of local sites to visit and people to meet. We journey to Launch Complexes 39A and B - sites where we first journeyed to the Moon; the ocean-front AB Camera Stop; Hanger AF at the Cape where the Space Shuttle's Solid Rocket Boosters are first inspected after recovery; the Vehicle Assembly Building; the Parachute Refurbishment Facility and of course the International Space Station Center. In these locations we are very fortunate in having the cooperation of NASA and many of the Space Shuttle contractors. Without the assistance of people like - the **Boeing Corporation, Lockheed Martin, United Space Alliance** and many more, our space students would loose out greatly in their space education. In some cases, many of our students actually get to meet up with their parents at work. Believe me, the results can be highly rewarding for everyone, especially when they pass on a message from a spouse - not to be late for dinner!

One of the newer attractions at **KSC** is **'Astronaut Encounter'.** In a very short period this program has become tremendously popular, not only with our space scholars, but with the general public as well. Kids will be kids of course, so at invited sessions our visiting astronauts are asked such 'popular' questions as:

**How do the astronauts use the bathroom in space?**
**How does micro gravity affect the human body?**
**How long will it take NASA to build the Space Station?**
**What are the practical benefits of space travel?**
**When will we land on Mars?**

### The Future:

It's here we educators face the greatest challenge! However, there are many encouraging signs on the horizon... **The International Space Station has become not just a dream of the future, but the reality of today!** As we know, the International crews have gone on board and so forward thinking people are already looking beyond the ISS. After the successful docking of the first crew, Daniel Goldin hinted that now might be the time for planners to consider a return to the Moon, onwards to Mars and in essence, fulfill our destiny and reach for the stars. When considering the future, we at **KSC** ask our space scholars to consider future space travel and what effects it might have upon society in general and them in particular. At **The Center for Space Education** we present them with the tools to engage themselves in worthwhile projects such as:

**Designing colonies on Mars and other planets and Moons.**
**Using battery-powered robots for construction projects.**
**Spending project time in one of KSC's newest exhibits - Exploration in the New Millennium.**
**Discussing their opinions on future space travel with technicians.**
**And last but not least, they examine the revolutionary products which have been derived as a result of space exploration and of course, what we might expect in the future.**

That was a brief synopsis of our new **Camp Kennedy Space Center** program. I'm quite sure that I don't have to add that we are very excited about this comprehensive program, however, I do believe that much more could be done. All of us here today involved in the space program should make it our combined ultimate goal to share 'space' with many more students. And it is precisely at this juncture I believe that NASA and the NASA contractors, should co-operate to a much higher level. In the years to come, both NASA and these corporations will have the advantage of reaching into the marketplace for all these **former students.** Our motto should be - **Educate Today, Employ Tomorrow!**

However, there are some problems which I believe we need to attend to. For instance, many motivated school children who are highly interested in space matters are unable to attend our spring and summer camps due to lack of finances, or transport. Many other schools and students throughout this State are unaware that these educational courses are available. Therefore it falls upon those of us who care about **Educating the Next Generation,** to develop and implement a concrete, publicized plan. Here are some suggestions I would like to propose to you.

### (1) Spreading the word of NASA.

Firstly, let's not delude ourselves into thinking that we might be able to persuade High School principals and teachers to introduce into their already tightly scheduled classrooms, a 'space curriculum'. That possibility is way down the line. But let us consider what we already have in place - our annual **KSC Open House Day** for instance. Here we have an

opportunity for expansion. Car passes for the Open House Day are traditionally picked up at a host of locations throughout Central Florida. In addition to the car passes, this package could contain both Educational information, workbooks, contest forms and quizzes. Contests foster increased communications and stimulate further interest in space educational programs. Prizes could be offered to the winning participants by a **selected panel representing NASA and the contractors** - responses to be returned at the Entrance Gates on Open House Day or mailed direct. And let's make these prizes something of real, educational value! This enlargement of the **Open House Day** idea would serve to bring 'space' not only into the home, but also indirectly into the classroom!

### (2) Who Pays?

Good question and may I make a suggestion - we do of course! Those NASA contractors who have the most to gain could extend a financial helping hand to their employee's children. However, I believe the initial costs, when shared, will be low. A newly formed panel of NASA and contractors geared to Educational matters, could supervise and audit the finances.

### (3) Encouraging further school involvement?

In addition to enlarging the Open House Day, we space educators need to appeal to all students from K to 12th. Grade. Encouraging responses in art competitions, written and design essays, robotics, and other exciting projects should be held on a regular basis. I would also suggest that more youth be incorporated into **NASA Select Television** programming - especially here in Central Florida. NASA television on occasions can be very removed from children's lives!

### (4) An Education Center at The Visitor Complex.

In the past, I believe that individually NASA and all of the contractors have played very vital roles in sharing the dreams of space exploration, not only with adults, but with the youth of this country too. However, as we move on our space odyssey into this new Millennium, I believe that now is the time for us all to **work together** and jointly and proudly institute a complete **Education Center at the Visitor Complex.** In such a venue, together we could tell the NASA story to the world. In such a venue, all the contractors could have displays and a showroom in which they could proudly demonstrate their participation in space exploration, with special emphasis on the enormous benefits to mankind, which have arisen as a direct result of the space program. With almost 3 million visitors annually, the rewards and goodwill generated would be enormous! Trained educators could be on hand to relate and explain the Space Shuttle program. It would become the meeting point for all **KSC Educational Programs** - a pivotal center of learning, and entertainment.

### How do we face the challenge of Disney?

Yes of course we all recognize that **KSC** faces stiff competition from Disney and the other tourist attractions located in Central Florida. During the past few years the two principal contractors at the Visitor Complex - **Delaware North** and **Johnson Controls** have invested millions of dollars into redevelopment projects at the Visitor Complex. In this regard it is important to remember that all these improvements and added attractions have not cost

the taxpayer one single cent. In fact, income from the Visitor Complex contributes directly to the NASA budget. To face competition from the ***mouse*** and the ***whale,*** while continuing to educate and entertain our visitors, I believe that we at **KSC** need to be more **'child friendly'**. With apologies to the purists, we need more attractions which will stimulate our younger visitors at the **Visitor Complex** and we need to **work together on these.** Here are a few suggestions I would like to make:

**(1) A Space Shuttle Ride** - Let's have fun, generate 'space 'fever' and really show what it's like as we launch our Astronauts into space.

**(2) A Micro-Gravity simulator.** We need a permanent ride at the VC to demonstrate what increasing **G forces** do to the body.

**(3) A Planetarium. Brevard Community College** and the **Kennedy Space Center** should co-operate much more towards the education of our space enthusiasts.

**(4) Let's take space to the nation!** I believe that the Kennedy Space Center should combine a **Space Shuttle Educational Show** with our exciting **Astronaut Encounter** and go on the road! Trust me, the response from the public would be enormous.

**(5)** And last but not least, let's add a comprehensive **Education Center to the Visitor Complex!** At present, we have three independent bodies dedicated to space education at the Visitor Complex - **NASA's Education Department, Delaware North's Education Dept.,** and finally, the **Astronaut Memorial Foundation** located at **The Center for Space Education.** I believe it's time for all these bodies to come together and work much more closely in the interests of **Space Education and Economy.** Let us all preserve and protect the past, the present and the future of space education.

**Conclusion.**

Recently Delaware North Parks Services announced that that company is to undertake a nationwide advertising campaign of the Visitor Complex. This is a great step! I believe that in a short time, with a greater variety of activities at the VC and the Tour destinations, the number of today's youth who commit their futures to 'space' will greatly increase. In addition, a more cohesive Education program will guarantee the success of NASA goals. Working together, we will be appealing directly to the general public, the next generation of engineers, educators, scientists, astronauts and all those who cherish space and the dreams we all aspire to. What nobler ideals could we aim for? **Educating the Next Generation** is our greatest challenge. In the immortal words of **President John F. Kennedy** spoken on May 25th. 1961, just twenty days after Alan Shepard's launch. . . And I quote:

**"In a real sense it will not be one man going to the Moon, it will be an entire nation, for all of us must work to put him there."**

In conclusion, I believe this nation - committed to exploring space, will return to the Moon, journey to Mars and then beyond. It is imperative therefore that we commit some elements of today's recourses towards the future - towards the education and training of those men and women who will one day take our place in the space industry. We must not fail them. Let us act now. **Let us all Educate the Next Generation!**