

Appropriations Committee Public Hearing

Testimony of Jeff Bishop Executive Director of the Discovery Museum

February 20, 2013

My name is Jeff Bishop and I am the Executive Director for the Discovery Museum in Bridgeport, Connecticut. We are extremely grateful to the State of Connecticut for their generous support over the years. For over 50 years, the Museum has provided a valuable service to the community which becomes especially important in these economically challenged times. The targeted grants from the Connecticut Commission on Culture and Tourism has served as a lifeline for our organization allowing us to provide a platform for STEM (science, technology, engineering and math) education to more than 80,000 annual museum visitors and a science based educational service to over 55,000 K – 8 students. With the recent addition of the 500 student Inter-district Discovery Science Magnet School adjacent to the Museum, it is the only school in the country that is affiliated with a science museum (next door) and a teaching university (Sacred Hearty University) across the street. The Discovery Museum has played a pivotal role not only in the professional development of the teaching staff, but also in the innovative and cutting-edge curriculum development for the Discovery Inter-district Science Magnet School. With Connecticut having the largest achievement gap in the entire nation, we at the Discovery Museum, are not just talking about it. . . .we are creating working solutions to this disturbing problem.

The Discovery Museum Plays a Crucial Role in a Bringing Math and Science to the Community

In the past year, the Discovery Museum has continued in its mission to educate our State's children in STEM education. Our Museum educators have served over 543 school groups on-site and 400 groups off-site reaching nearly 55,000 children from 50 Connecticut cities and towns. We deliver almost 3,500

hours in Bridgeport public and parochial classrooms teaching hands-on, minds-on science with curriculum that meet State Department of Education standards. Discovery's programs are especially valued by schools since they cover specific science topics now included on the Connecticut Mastery Test. In addition we are home to the NASA Challenger Center, one of only 44 centers world-wide that provides group learning in a simulator Mars mission setting.

In addition to offering educational programs, the Museum hosted a variety of events including:

- Our African-American History Month Celebration in which we honored Mr. Marcus McCraven who was on the original team of the Manhattan Project that developed nuclear technology, as well as Ms. Geraldine Johnson the first African American Superintendent of Schools here in Connecticut.
- The Transit of Venus across the Sun event, which is one of the rarest of planetary alignments. The Discovery Museum hosted a live-stream presentation carrying the NASA feed and had several solar telescopes for the public to actually view this amazing occurrence. We had one of the largest attendance in the entire region for this event.
- Hispanic Heritage Celebration in which we had NASA's Astronaut Michael Massimino give a talk on his experience at NASA and his many space missions on the Space Shuttle Columbia and Atlantis to fix and repair the Hubbell Space Telescope. We also had a live Skype teleconference with the Arecibo Observatory, the largest radio telescope observatory on earth, from Puerto Rico, and watched as they observed and analyzed the tail of a comet.
- Our Women's History Month Celebration was in partnership with the League of Women Voters and the American Association of University Women. We had over 40 exhibitors including: the US Coast Guard, Bridgeport Fire & Police Departments, General Electric, Girl Scouts, St.

Vincent's Health Services, Army/Navy, Sikorsky Aircraft, Beardsley Zoo, Maritime Center, Trumbull Agri-science, Hamilton Sunstrand, Barnum Museum, Stamford Nature Center Stratford School of Aviation, and many more. We were also joined by Nancy Wyman, Lt. Governor and Denise Nappier, Treasurer, State of CT.

A new initiative we will be embarking on is our CubeSate program. This exciting program will involve the Discovery Museum partnering with researchers, area corporations and universities to develop a unique mission to measure the frequency of orbital debris impacts in low earth orbit and teach science, technology, engineering and math (STEM) along the way. This is an innovative educational tool that will be an integral part of the new science curriculum at the new Fairchild Wheeler Inter-district Science High School, currently under construction here in Bridgeport.

The Discovery Museum Receives Minimal Government Support

By national standards, The Discovery Museum's current level of government support is below average nationwide; science and technology centers receive approximately 25% of their funding from the public. Discovery's public support currently stands at below 20%. Because The Discovery Museum receives no such support from Bridgeport, we have relied on an annual operating grant through the Commission on Culture and Tourism to help make ends meet.

The Discovery Museum Requests Your Continued Support

We ask for the State's continued support of our work in 2013 - 2014 at a level comparable to our current grant. Of course, we understand these are extremely difficult economic times, and are grateful for any funding, however, losses in our endowment and deep reductions in private funding opportunities will make the proposed additional cuts in the Governor's budget problematic. The Discovery Museum's

science and technology mission and the work we do with local school districts to support science literacy for all children is perfectly aligned with our state's direction and needs in these challenging economic times. Career opportunities of the future remain in clean energy, healthcare, information technology and education, where knowledge of science and technology is critical. Tackling our state's achievement gap becomes even more important as job markets tighten, making it harder for people with marginal skills to find meaningful employment. With enrichment programs that target what young people need to know and be able to do in science reaching tens of thousands of children each year, the Discovery Museum is ready to do its part to bring about our region's future prosperity. We appreciate your support through these challenging economic times.

Attachments:

The Quiet Crisis

CubeSat – Small Satellites Teaching Science

Discovery Science Magnet School



Discovery Science Magnet School

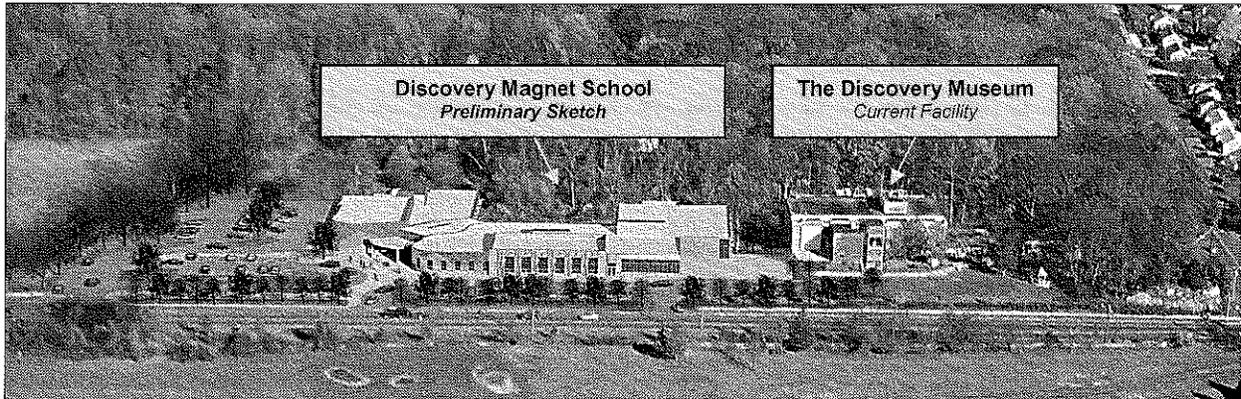
Project Overview

Discovery Museum staff and trustees have been working with representatives of Bridgeport public schools, the City of Bridgeport, and its planning and community-based partners since 2004 to establish the *Discovery Science Magnet School*, a pre-K to 8 inter-district public school with a science mission located on Discovery Museum grounds. This unique school will combine the best hands-on learning techniques with the most effective standards-based educational strategies to create a learning environment that truly engages, excites, and educates young people while it prepares them for the economic and social challenges of the 21st century. Construction began in September 2009 and is slated for completion during the 2011-12 school year. Enrollment will be open to students ages 3 to 13 from Bridgeport and the surrounding communities with a targeted mix of 70% urban and 30% suburban students. Once fully populated, this school will serve approximately 500 children.

Unique Educational Opportunity for Greater Bridgeport

This magnet school represents an important educational opportunity for greater Bridgeport. Not only will it provide a high quality educational choice for students living in the city, it will also give suburban students a chance to take part in specialized programs not available in their home districts. Because of its planned location within Veteran's Memorial Park, environmental stewardship will be an overarching theme of the school, its facility and program. In addition, the school's proximity to The Discovery Museum will open up countless opportunities for exciting collaborations between the Discovery Magnet School, the Discovery Museum and the larger community. Examples of these potential collaborations include:

- Special enrichment activities for students and adults taught either by school faculty or museum staff that take advantage of the unique resources of each;
- Ongoing "citizen scientist" programs that engage students and the community with the natural environment of the surrounding 90-acre urban park in a thoughtful and informed way;
- Showcase events and exhibits at the Museum that feature student work and complement the school's curriculum;
- Joint learning festivals and fairs run by students, school faculty, and museum staff meant to educate and inform people about science issues affecting their daily lives (health, environment, technology, etc.);
- Curriculum projects developed jointly by school faculty and museum staff that are piloted with magnet school students and then shared with the larger educational community.



The Discovery Science Magnet School planning partners are: the Bridgeport Public Schools and the school systems of Easton-Redding, Fairfield, Milford, Monroe, Shelton, Stratford and Trumbull. The Discovery Museum, Beardsley Park Zoo, and Sacred Heart University are community-based partners. General Electric Company and UTC Aerospace Systems are key supporters.

Plans and Timelines

A curriculum committee comprised of representatives from the school district, museum, and university as well as from members of the surrounding communities has created an educational plan for the school that will be refined between now and when the school opens in 2011. The hiring of staff and recruiting of students will be the responsibility of Bridgeport Public Schools with input from an Advisory Board made up of representatives from stakeholder institutions, area business and industry and the public.

Between now and “opening day,” Discovery Museum staff and trustees will work to upgrade its facilities and programs in anticipation of the increased, daily influx of eager learners. Plans to update the Museum’s instructional technology to match or exceed that slated for the school are already underway, and funds to create extended science learning programs that will take advantage of the daily presence of students “on campus” are being sought. Assuming adequate resources can be secured, our goal is to achieve a complete update of the Museum’s exhibits and programs, including an “outdoor classroom” and “greening” of our facility, by the time the school is fully populated in 2014. Numerous sponsorship opportunities exist for foundations, corporations and individuals to become involved in this exciting project.

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CubeSat - Small Satellites Teaching Science

Discovery Museum will be partnering with researchers to develop a unique mission to measure the frequency of orbital debris impacts in low earth orbit and teach science, technology, engineering and math (STEM) along the way. The space environment in low earth orbit (LEO) presents unique challenges for space exploration. Spacecraft must meet the technical requirements to perform their mission objectives while operating in the extreme temperature and vacuum of space. In addition to these challenges, space explorers in LEO must also contend with small bits of high velocity cometary ice and rock and orbital debris left from over 40 years of space exploration. In LEO the contribution from orbital debris dominates and for small scale spacecraft in the size range of Cube Sat, cubic satellites of 10cm on each side and smaller, the effects of orbital debris impacts can be significant.

Discovery Museum and partners propose to measure the effects of exposure to micro-scale orbital debris by developing and deploying a CubeSat capable of collecting impactors on an aerogel exterior. Impactor energy, impactor flux and impactor characteristics can be collected during a mission exposing aerogel to LEO environment.

Discovery Museum, through its education and professional partners, will develop and implement STEM curriculum in support of the mission. The Museum operates a HAM radio station with antennas that have pointing and tracking capabilities. In partnership with local and national HAM radio clubs, curriculum on telemetry, satellite communication, and command and control will be delivered which offers students the opportunity to manage a real space mission from a student run ground station. The ground station will also be linked to a Challenger Center on site which repurposes the Mission Control simulator into a working mission operations center. A student payload will also be included in the mission offering in-orbit remote sensing with satellite imaging, pointing and downlink capabilities.

The project is seeking support from various community, education, corporate and private partners to fund the development, testing and construction of the CubeSat. Letters of financial support must accompany the application for the CubeSat Launch Initiative, managed under NASA Human Exploration and Operations Mission Directorate, to strengthen our proposal. Upon selection, NASA will provide integration and other services as necessary to complete the launch activity.

“THE QUIET CRISIS”

DID YOU KNOW?

- **U.S. students are lagging behind their foreign peers** in the areas of science and math. *
- Testing shows American **fourth graders** have remained **stagnant** in their learning levels in science and math since 1995. *
- **By 8th grade**, most American students have **lost interest in science**.
- **In our region’s poorest city** - Bridgeport – **only 9.6% of 10th graders met state goals** in science academic performance tests.
- CT State and local educational **budget cuts** have **drastically reduced school curriculum** and **eliminated enrichment programs**.
- **It takes 15 years to create a scientist or advanced engineer**, starting when that individual first gets hooked on science in elementary school. *

HOW THE DISCOVERY MUSEUM HELPS:

- **Inspires** over 55,000 students a year **through interactive experiences** to **“get turned onto science”**.
- Provides a staff of professional scientists and teachers who utilize **innovative, dynamic lessons** that **capture interest** and **provoke creative thought** through **hands-on experimentation**.
- Brings **customized science courses** into area schools supplying **after-school enrichment**, slashed by budget cuts.
- Creates **advanced science and technology instruction** for **“Talented and Gifted”** students, eliminated by local budget cuts.
- **Trains teachers** to become more **scientifically literate** by transferring academic theory into real, life experiences.
- **Develops interactive, creative learning opportunities** for youngsters to get a basic grounding in science by learning **“how the world works.”**
- **Provides a stimulating, learning environment** through the Challenger Learning Center, duPont Planetarium, high-definition CineMuse Theater, and specialized learning labs.

