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NASA: A Full Spectrum of Web-Based Support for Educators

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The National Aeronautics and Space Administration (NASA) [1], the US Government agency responsible for the nation’s public space program, has created a web space almost as vast as space itself. NASA, like other government agencies, has allocated a portion of it’s $16 billion dollar budget for educational resources and programs. Two elements of NASA have driven this change: 1. NASA’s commitment to structuring the organization in a way that allows it to integrate educational programs into the current space projects, and 2. NASA’s commitment to using the Internet as its primary content delivery system.

NASA’s education programs are administered by three different divisions [2]: The Office of Education, Mission Directorate, and Center Education Offices. The Office of Education maintains and supports the infrastructure and national partnerships with outside agencies that create and disseminate NASA educational curriculum. The Mission Directorate helps the offices of: Aeronautics Research, Exploration Systems, Science and Space Operations integrate educational goals and curriculum development into their flight missions. The Center Education Offices are comprised of educators who organize and create the curriculum so it meets the specific needs of educators. They design the curriculum and organize it around national science teacher association [3] and state curriculum standards. Government agencies who create and distribute curriculum via the Internet are beginning to understand that this is a critical part of any successful education effort.

The NASA curriculum resources are possibly the most comprehensive and powerful collection put out by any government agency whose primary duty is not education. This is the case for primarily two reasons. First, scientists were the creators and early users of the Internet. Since 1956 ARPA [4] The Defense Advanced Research Projects Agency has worked closely with NASA as it was funding projects that developed the early computer networks that eventually formed the Internet. Consequently, networking in the technical and human sense of the word was a framework that was integrated into the organizational work and mindset of NASA. Second, governmental
agencies, because they are designed to work closely and integrate with other agencies have planned and designed their systems to work closely with each other. Hence, the curriculum and resources available on NASA’s site are well integrated with other professional organizations and their resources.

The web-based support NASA offers educators and the public is effective because of the organization and high quality content. The NASA Education site takes a user to the materials and curriculum targeted to their needs. NASA makes a distinction between educators and noneducators.

The educators materials are organized by grade level. The kind of materials available to educators come in the form of curriculum or raw material resources. The NASA multimedia resources available on the Internet to educators are outstanding and allows educators to bring raw multimedia materials into any existing curriculum. For example, the NASA image gallery has a vast collection of images in different image libraries available in high or low resolution formats. The satellites and telescopes NASA use allows them to capture and select the images that educators might want to use. This process is made possible by establishing the organization in advance and integrating the educational mission of NASA into all it’s space missions and projects. The multimedia gallery also contains podcasts, a video gallery, NASA TV, and an art gallery. All the material is not copyrighted and free for the public and educators to use.

Along with the multimedia gallery, NASA has an extensive list of over 200 teacher/faculty preparation and enhancement programs. The programs range from on-site classes to online development. For example, the NASA Explorer School Program promotes and supports the incorporation of NASA content and programs into science, technology and mathematics curricula in classroom grades 4-9. It specifically targets underserved populations in diverse geographic locations. The NASA Explorer Schools bring together educators, administrators, students and families in sustained involvement with NASA’s education programs. Teams are composed of full-time teachers and a school administrator. Over the course of the program they develop and implement a three-year action plan to address local challenges in science, technology and mathematics education.

Along with faculty and school long-term development programs, NASA also offers programs targeted specifically to students. These programs offer students the opportunity to participate in ongoing NASA space projects. For example, the Great Moonbuggy Race Project allows students to design moonbuggys that could be used to explore the moon. There are design rules for the competition which culminates with a final competition and exhibition held at the Marshall Space Center in Huntsville, Alabama.

Early on NASA’s commitment to integrating educational programs directly into it’s day to day operations and space projects made a powerful impact on the ongoing growth and development of all it’s educational efforts. This effort coupled with the commitment to web-based support materials have made it a leader among government agencies in the creation and distribution of
educational materials.

References:


[6] NASA faculty preparation programs


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