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Space Update: A Fun Way to Teach Space Science

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Abstract. In just a few short years the internet has gone from having too few sites of interest in science to too many – in both cases it can be difficult to find the information or activity that is needed to learn (or teach) a specific concept. Museum exhibits have gone from “mausoleums” of dusty science artifacts to vibrant, interactive, hands-on, real-time safe sources of up-to-date information and images. Space Update, developed with NASA DLT and OSS resources, can provide just the starting point for many a lifetime of exploration, and many activities and games along the way to make the journey fun.

The first online interactive realtime computerized exhibit of earth and space science was developed with resources from the Digital Library Technology (DLT) program: “Space Update,” funded by IITA under the “Public Use of the Internet” program. First on display in late 1994 at the Houston Museum of Natural Science, this software was safer than a browser (since it did not allow unlimited access to the web) but yet allowed one-click updating of earth and space science imagery – views of the sun in various wavelengths, weather maps and NOAA satellite images, etc. Our first module “Shoemaker Levy 9” was on display only 6 weeks after the historic comet hit Jupiter; a full space module opened in October 1994. The earth section, “Earth Today,” opened in summer of 1995.

The software was the first to attempt to bring the power of the internet to the citizens on the far side of the “digital divide.” At that time very few of the public had access to the internet at the office, much less at home, and fear of computers was common. Yet kids were attracted to a display that dynamically changed in response to a touch, and a very popular kiosk was born and has been on display in some version at the museum ever since. This early software (developed prior to Netscape or Internet Explorer) nevertheless was instrumental in bringing earth and space hands-on information to over a million people. (It still doesn’t need a keyboard in order to run!)

Although the software was developed for use as a museum exhibit, many teachers whose classes came through the museum or who participated in our workshops asked for their own copy of the software, and requested that we develop activities to go with the software. Responding to that plea, we created our first “Space Update” disk, called “Connected,” in early 1996.

In 1999, NASA's first Cooperative Agreement Notice for innovative products in Earth science was released, and we were one of the first awardees for the ESIP (Federation of Earth Science Information Partners). As a part of that project, we developed a separate "Earth Update" software, a full interactive museum exhibit, "Earth Forum," and a series of immersive Earth science shows, including "Powers of Time" (about the cycles of Earth); "Force 5" (about the greatest storms on earth and in space, and "Night of the Titanic," a show that teaches about the conditions on earth and in space that, coupled with human error, caused that tragic sinking. At that time the earth part was removed from Space Update, leaving room to expand Space Update to include a simplified planetarium module plus a "space events" section. Earth Update became its own piece of software, with a consistent look and feel among the Atmosphere, Biosphere, Cryosphere, Geosphere, and Hydrosphere sections.

Space Update is a favorite among museums and schools for its robust design. Its five modules, Astronomy, Solar System, Sky Tonight, Space Weather, and Space Events, can run as a single linked exhibit, or all except Space Events can run as a stand-alone exhibit. Space Weather even expanded to become its own CD-ROM, with extra activities, movies and sounds highlighting the results from Space Weather missions like IMAGE. Over 11,000 copies are in the hands of museum and school educators and the public, with the software on permanent display in many fine museums. The software passed the NASA product review, and was recently reviewed in the December 2003 "Sky and Telescope": ... "I was amazed at Space Update's intuitive interface" ... "a must-have for science teachers" ... "You can bet that Space Update will be on display at our local observatory and my club's future Astronomy Day activities" ...

Space Update to Teach Space Science

- Making the study of space science more "real" for the students by using real images
- Giving many graphic examples for hard to understand concepts to help make information understandable to many different age groups
- The variety of presentation types helps reach all learners
- Real world applications to "Why do we need to know this?"
- Giving students new and interesting career ideas

Activities

- Gives relevant application of information presented in Earth/Space Update
- Shows how information would be used in the "real world"
- Activities may be presented in a variety of ways, not just lower level *Bloom's Taxonomy*

In Ms. Furitisch's classroom, the most exciting and most rewarding result of using new technology is to turn on the students who are just "marking time" through science. She has several examples of students who routinely failed science every six weeks, who are now actively engaged and considering a science career, coming back to her with their new knowledge of science even after they have gone on to high school. It is examples like those that keep us making interactive exhibits that are educational and fun.

For more info: <http://earth.rice.edu>

Acknowledgments

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