



Learning Environments and Research Network

2010 Annual Performance Report
Administered by OSU (DLN), GA TECH (ePDN), WJU (COTF)
Type of Agreement (Cooperative Agreements)
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PROJECT DESCRIPTION

The NASA Learning Environments and Research Network (LEARN) is a suite of three E-education activities within the K-12 STEM Education Program – STEM Teacher Development (K12) that provides distance learning opportunities to students and educators, and conducts research and development initiatives in educational technology. The activities are the NASA Digital Learning Network™ (*Oklahoma State University*), The NASA-sponsored Classroom of the Future (*Wheeling Jesuit University*), and the NASA Electronic Professional Development Network (*GA Tech*).

PROJECT GOALS

- Provide the NASA Office of Education with eEducation infrastructures used to inspire, engage, and educate K12 students and educators.
- Conduct research into existing and emerging learning environments and associated technologies.
- Plan, prepare, produce, deliver, and evaluate distance learning events that feature NASA-related research and missions.
- Collaborate with other NASA Education Projects to further the effective use of distance learning and online learning technologies.

PROJECT BENEFIT TO OUTCOME (1,2, OR 3)

Outcome 2. LEARN makes use of instructional technologies that overcome the barriers of time and distance thus increasing the number of students and educators who are exposed to NASA-related STEM content. LEARN also conducts research into existing and emerging technologies to better inform the NASA Office of Education of their usefulness in meeting its goals and objectives.

PROJECT ACCOMPLISHMENTS LEARN – 1. *LEARN Workshop*, 2. *Meet Financial Deadlines*, 3. *Provide Direct Support for other NASA Education Projects*, 4/5. *Provide eEducation/K12 STEM Education Leadership*

1. Planning and preparation for first LEARN Workshop underway – Dec. 6-10, 2010 at GA Tech in Atlanta. 60-70 attendees representing all three LEARN activities.
2. Achieved 100% Obligation of 2010 funding.
3. LEARN is providing weekly Webinars for the NASA Explorer Schools Project new model implementation.
4. LEARN Manager received Exceptional Service Medal for contributions to NASA Education.
5. LEARN Manager served as K-12 STEM Education Program Manager during a two month detail at NASA Headquarter's Office of Education in 2010.

NASA Digital Learning Network™ - 1/2. *Develop solicitation, review proposals, award new agreement*, 3. *Redesign and go live of new DLN website*. 4/7/8. *Support Sol and increase webcasting* 5. *Upgrade core equipment*, 6. *New initiative to get more NASA experts involved in DLN*, 9. *DLN-wide special event*, 10/11. *Staff development and awards*

1. Awarded new 5-year Cooperative Agreement to Oklahoma State University for the NASA Digital Learning Network™ (August, 2010)
2. Conducted week-long DLN new agreement kick-off workshop at Langley in July. All DLN staff from 9 Centers and OSU were present.
3. New DLN Website went live in August after a year of planning, design, and testing – significant increase in visits to the new site (completely new site from ground up designed to overcome hacking and coding issues)
4. Produced and delivered 9 live DLN-Summer of Innovation Webcasts from all active DLN sites – each aired twice through DLNfo Channel, June 15-August 19. (JPL – position vacancy)

5. Completed complicated 6-month procurements for HD Videoconferencing Bridge and HD Videoconferencing units delivered to 7 NASA Centers.
6. Initiated NASA Virtual Visits as part of Langley Day of Education – using DLN to connect students and teachers with NASA experts through online technologies.
7. Conceived, designed, and implemented NASA EdLine News shows which featured education stories. 14 programs produced so far with 9 airing before and after each Summer of Innovation Webcast.
8. The DLiNfo Channel webcast 94 events during the year. Events ranged from LaunchCasts from KSC, to the Great Moon Buggy Race at MSFC, to numerous career-focused events and professional development events in cooperation with Aerospace Education Services Project and Flight Projects.
9. Celebrated Apollo 40th Anniversary by conducting 5 events from 5 DLN sites. A US and an International schools participated during each event which were also webcast.
10. DLN Coordinators involved in advanced degree programs: 4 DLN staff in doctoral programs and one working toward a masters degree.
11. Awards:
 - MSFC DLN Coordinator received MSFC Silver Snoopy Award in 2010 - The **Silver Snoopy award** is a special honor awarded to [NASA](#) employees and contractors for outstanding achievements related to human flight safety or mission success.¹
 - KSC DLN Coordinator received CILC Pinnacle Award 2009-2010 This award, presented annually, is based on teacher evaluations submitted through the Center for Interactive Learning and Collaboration (CILC) website and recognizes outstanding performance by a content provider.
 - SSC DLN Coordinator received the NASA Stennis Frontline Award NASA presents Frontline Awards to honor superior service or products, exemplary support of the Stennis mission, motivating others to higher performance, commitment to safety and outstanding community leadership.
 - DLN received United States Distance Learning Silver Award for Excellence in Distance Learning Teaching during 2010. USDLA is the world's largest distance learning professional organization.

NASA Electronic Professional Development Network – *1. Certificate implementation, 2. ePDN promotional efforts, 3. Self-directed course development, 4. Increase enrollment in courses*

1. NASA ePDN implemented courses in all four Certificate Programs (Robotics, Data Analysis, Project-based Inquiry Learning, and Technology Integration) All four Certificates to be fully implemented in Spring, 2011.
2. In September 2010 the ePDN was promoted in a radio piece done by West Virginia Public Radio. WVPR interviewed the project's PI, Dr. Nelson Baker, along with two participants of the ePDN courses. The piece highlighted the ePDN's focus on providing easily accessible, quality professional development for educators through our four certificate programs.

3. The ePDN hosted two teacher interns this summer as part of the GT GIFT program. Both teachers worked with other NASA education programs to develop content for ePDN self-directed courses. Luther Richardson traveled to Glenn and worked with the DIME program on the microgravity self-directed course. Christy Garvin traveled to the NBL and worked with Teaching from Space to develop content for a second self-directed course on neutral buoyancy.
4. In FY10, 392 educators took ePDN courses. Teachers came from 46 of the 50 states, as well Puerto Rico. We also had three US teachers who teach abroad in Brazil, Mexico and the Ukraine. We consistently have between 100 and 200 applications for each course offering.

NASA-sponsored Classroom of the Future – 1. *Costing Improvement*, 2. *Transfer of DLIInfo Channel management*, 3. *NASATalk.com growth*, 4. *Product review progress*, 5. *MoonWorld development*

1. COTF - The addition of three new staff members with new and diverse expertise: Debbie Piecka, Ed.D., Educational Researcher/Instructional Designer, Tamie Shiplett, Curriculum Writer (former middle/high school science teacher), Ralph Seward, computer programmer
2. COTF continued support of NASA TV streaming and scheduling of NASA Education programs, upgrade to HD capability. COTF was assigned the responsibility of 24/7 operation and expansion of the new NASA DLIInfo Channel in August 2010. Integrated the WJU Communications program via student work study and internships with the DLIInfo Channel. Students are helping with program acquisition, validation of program format with the media servers, categorizing programs, and ingesting the programs into the media server. The students will also be building promos and bumpers for on air use.
3. Significant expansion of NASATalk.com content and user base. Increased use of website after transition from EdTech Collaborative. Highlights include our first three STELLAR Award winners and the growth and success of private, event-specific collaboratives. Adding a LEGO MINDSTORMS NXT Robotics Collaborative as support for educators learning robotics and robotics team coaches, including the GA Tech online robotics course. Added security/defense and backup routine. Organization and execution of three STELLAR Awards. Growth of NASATalk as project toward a scholarly/model-driven activity. For example with the soon to be published Book chapter, NASATalk as a Discovery Learning Space: Self-discovery Learning Opportunities.
4. COTF Product Review: Reviewed 42 products. 21 approved. Updated website for submission; recruited 200 new reviewers for a total of 464 available. 80 reviewers conducted reviews. Putting the new Product Review website online has been our major accomplishment, as well as recruiting several

hundred enthusiastic and well-qualified reviewers who view this as an opportunity to work more closely with NASA.

5. COTF - MoonWorld: A virtual world which engages teams of learners to collaborate in the practice of authentic planetary science field work while it guides them to make observations (study morphology) and record measurements (study topography). Fall 2009: Prototype build opened in Second Life (adults only). Summer 2010: Phase 2 build & release in Second Life (adults only). Prototype the Biological Support System (BLiSS) Challenge module. Fall 2010: Port Phase 2 build to OpenSim for use in professional development and youth education (ages 9 and up). Build the Biological Support System (BLiSS) Challenge module. Began porting to OpenSim for safe access by teens. Development of MoonWorld and work toward migrating it to site more accessible to youth along with paper presentations in Rome and Planetary Science Conference.

PROJECT CONTRIBUTIONS TO PART

Percentage of elementary and secondary educators who obtain NASA content-based education resources or participate in short-duration NASA education activities and use NASA resources in their classroom instruction. (short duration education experiences)

Project	Year	TOTAL Number of Participants	Unique Participants	Number of survey responses	Educators using materials	Percent using materials
LEARN	FY10	14,543	14,543	480	419	87.29166667

These are the teachers who participated in DLN videoconferences during 2010. At the end of each event, they are encouraged to fill out the online surveys.

Percentage of elementary and secondary educators who participate in NASA training programs and use NASA resources in their classroom instruction. (long duration)

ePDN	FY10	392	392	72	72	100
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Number of elementary and secondary student participants in NASA instructional and enrichment activities. (short and long engagement)

Year	Total # participants
FY10	124704

The number represents students who were present during DLN events. Each event is close-out with accurate accounting of participants.

Cost per participant for NASA elementary and secondary education programs

Cost/participant 15.622

This cost does not take into account webcast viewers since we are only able to acquire the number of connections not the actual number of people watching. In many cases one connection may have a classroom full of viewers. At a minimum the total webcast connections (37193) could be added to the total resulting in a lower cost per participant.

Project LEARN	FY10	Unique short duration educators 14,543	Unique long duration educators 392	Unique students 113,230	Total number unique E&S participants reported 128,027	Budget by project FY/10 2,000,000
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Additional metrics

- Number of general public reached (through this project ONLY) 1,021,512
- Number of family participants
- Number of new products reviewed 42
- Number of new products (above) approved 21
- Number of students/educators reached through indirect methods 18,560
- Number of pre-service vs. in-service educators reached 75
- Number of page views for a project unique website 5,647,388
- Number of news stories generated by project activities 220
 - Webcast (Flash) connections 37,193

IMPROVEMENTS (e.g. project management, efficiencies, etc.) MADE IN THE PAST YEAR

- DLN Website Upgrade – more secure, easier to use for registrants, and allows more flexibility for DLN staff the change pages, etc. Expanded ad hoc reporting functionality and ability to add portal tools as they become available.

- Award of 5-year cooperative agreement with OSU for management of the DLN. Included in the agreement is the development of 5 partnerships with external distance learning organization for the purpose of extending the DLN's educational efforts.
- Transfer of DLiNfo Channel to COTF – improved bandwidth, access to additional staff, TV production students gain valuable experience programming a webcast channel and producing promotional videos.
- More cross-training on DLN modules across DLN sites so when a presenter is not available the event does not have to be cancelled
- Greatly improved costing by LEARN activity managers.
- Improved synergy among LEARN activities – ePDN use of NASAAtalk.com, ePDN assisting with NES webinars, COTF and DLN co-management of DLiNfo Channel, ePDN presenting via the DLiNfo Channel, COTF – EdLine News reports from WJU, DLN uses NASAAtalk.com, Bi-monthly LEARN Activity Managers meetings
- DLiNfocus Career Series has been exported to all DLN sites from ARC and MSFC allowing for weekly videoconferences/webcasts featuring NASA personnel
- DLN Modules undergoing complete review for relevancy, accuracy, and usage.

PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

External

- DLN - United States Distance Learning Association – collaboration on Apollo 40th Anniversary celebration – provided connections with international schools
- COTF – Girl Scouts – assisted with grant to purchase LEGO kits and set up a NASAAtalk.com collaborative to help the girls succeed in robotics competitions.
- ePDN - Southeastern Consortium for Minorities in Engineering (SECME) assisted with Summer of Innovation proposal writing

Internal

- DLN – Teaching from Space – professional development for new ed. Products (internal/external)
- DLN-INSPIRE – Summer videoconferences and webcasts introducing students at centers to each other
- LEARN - NASA Explorer Schools – collaboration on delivery of 8 product webinars for the 2010-2011 school year
- ePDN - NASA Glenn - worked with them to create a self-directed course on microgravity that will prepare teachers to have their students participate in DIME and WING.
- ePDN – Neutral Buoyancy Lab (NBL) - sent a teacher down there to learn more about the facility and develop another self-directed course on neutral buoyancy and related subjects
- COTF – STS 131, 132 Education Forum use of NASAAtalk.com
- DLN – AESP – collaboration on using webcasting to present specialists' content.
- ePDN – AESP - Two instructors presented via VTC at AESP's 2nd Annual NASA STEM Educators Workshop Series in February