INSPIRE

2012 Annual Performance Report
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Type of Agreement: Cooperative Agreement
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INSPIRE PROJECT DESCRIPTION

The NASA Interdisciplinary National Science Project Incorporating Research and Education Experience (INSPIRE) is a research based student pipeline project designed for students in 9th to 12th grade. The centerpiece of the INSPIRE project is its one of a kind Online Learning Community (OLC). NASA's unique mission provides the content for the OLC with the intent to spark interest of students in NASA STEM-related education and career opportunities. The OLC provides a virtual place for INSPIRE students to interact with their peers, NASA experts and education specialists. Through educational activities, chats and discussion boards, students and their families are exposed to the many careers and opportunities at NASA. The OLC also provides parents and caregivers resources designed to help them champion their student's education and career goals. To bridge the "digital divide," for students from families experiencing financial difficulties and ensure all students have an opportunity to participate in the OLC; those who qualify for the National School Lunch Program are eligible to be awarded a laptop computer.

INSPIRE offers students a rich OLC by providing resources and educational activities/challenges, as well as a mechanism for the students and parents to interact, ask questions, and share knowledge. The activities provide grade appropriate NASA content adding relevancy to courses being taught in school. Students also have the opportunity to participate in video teleconferences with NASA Centers during the year. These video teleconferences provide direct connection to the centers and feature additional NASA unique content as well as speakers and role models. In addition, participation in educational activities offered by other organizations is encouraged to further enhance the students' knowledge and experiences. As the U.S. continues to compete in a global economy that demands innovation, the OLC helps develop 21st century readiness for students by providing an opportunity for critical thinking, problem solving, communication, collaboration, creativity and innovation.

The INSPIRE project provides a vital link between NASA's Elementary/Secondary projects and Higher Education projects. The scope and purpose of INSPIRE emphasizes the recruitment of underserved and underrepresented students to ensure a diverse pool of candidates from throughout the U.S.

INSPIRE

v. inspired, inspiring, inspires

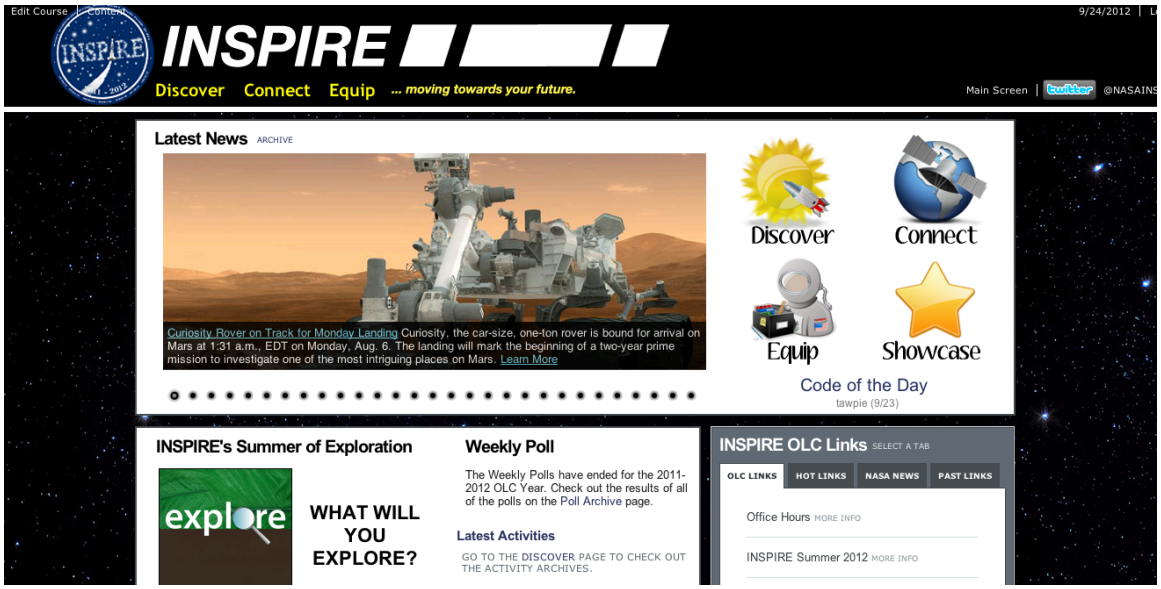
1. To affect, guide, or arouse by influence. 2. To fill with enlivening or exalting emotion. 3. To stimulate to action, motivate. 4. To draw forth; elicit or arouse. 5. To be the cause or source of; bring about

Source: The Free Online Dictionary

Students selected to participate:

- Are given exclusive access to the OLC
- Learn about science, technology, engineering and mathematics (STEM) fields of study and careers;
- Have the opportunity to participate in unique summer Virtual STEM Experiences;
- Are provided the opportunity to attend an annual student Unconference.

Members of an online learning community (OLC) have a "joint and cooperative pursuit of educational goals, respect for cognitive diversity" (Shea et al., 2006, p.176) and pursue an active role within the group. Online learning community models allow students to actively engage each other in "ideas and perspectives they hold to be educationally worthwhile, exciting, and provocative" (Shea et al., 2006, p.177). The emphasis on community supports the idea that learning is founded on participation rather than strict acquisition of information (Sfard, 1998), another concept that has a firm foundation in constructivist learning. OLC's have the ability to create communities of individuals who would, under normal circumstances, never meet because of an OLC's ability to cross geographical borders and removing the barrier of time (Oloffsson, 2007).



Home Page of the OLC

INSPIRE PROJECT GOALS

Goal 1: Serve as a nationwide project to develop emerging adolescent and parental awareness and understanding of STEM-related education and careers.

Goal 2: Engage students and families with grade-appropriate resources and activities/educational modules and provide the capability for them to interact, ask questions, and share knowledge with their peers through participation in the OLC.

Goal 3: Provide unique NASA/STEM experiences to students and their families to further inspire and reinforce student's aspirations to pursue STEM education and families to support their student's pursuits.

INSPIRE CONTRIBUTION TO STRATEGIC GOAL 6:

Strategic Goal 6 - Share NASA with the public, educators, and students to provide opportunities to participate in our mission, foster innovation and contribute to a strong National economy.
6.1 - Improve retention of students in STEM disciplines by providing opportunities and activities along the education pipeline.
6.1.2.2 - Provide elementary and secondary students with authentic NASA mission-based opportunities that build STM knowledge, skills and career awareness.

OLC Summary

- 2,054 students enrolled in OLC during 2011 – 2012 school year
- 165 students (8% of the OLC population) who qualified for the National School Lunch Program and provided appropriate documentation were awarded a laptop computer
- Based on OLC post survey:
    - 24% of students participated in the INSPIRE OLC the previous year
    - 98% of students would recommend INSPIRE to another student
    - 71% of students have already recommended INSPIRE
    - 98% of parents would recommend INSPIRE to another family
    - 89% of parents have already recommended INSPIRE
    - 100% of students and parents were *Likely or Extremely Likely* to recommend the Unconference experience to other students and families
- The effects of student participation in the OLC indicate it is a powerful tool as a means to connect students from throughout the U.S. to NASA and STEM.
    - 86% report participation was a good investment in their time
    - 90% report they want to take more STEM courses
    - 90% report they have a better understanding of NASA's mission
    - 87% report they enjoy learning with NASA resources

INSPIRE involves students in STEM disciplines by providing NASA resources and grade appropriate experiences through their participation in the OLC, unique summer Virtual STEM Experiences, and the INSPIRE Student Unconference. These activities and experiences nurture and support student interest while helping them understand the skills necessary for a NASA and STEM career. As a result of OLC participation, 90% of students, who completed the post OLC survey, report they wanted to learn more about science, technology, engineering and mathematics, and 90% indicated they wanted to take more courses in science, technology, engineering or mathematics after learning with NASA. Between 95% and 100% of students participating in Virtual STEM Experiences reported being more interested in a career at NASA or in STEM as a result of their participation in that experience. Of the students and parents who attended the INSPIRE Student Unconference, nearly all agreed or strongly agreed the experience inspired them to learn more about STEM (92-100%), they prefer to learn with NASA resources (92-97%), they enjoy learning with NASA resource and materials (96-100%), and they want to take more courses in STEM after learning with NASA (96-100%).

INSPIRE is a critical link in NASA's student pipeline, drawing students from middle and high schools, other Elementary and Secondary Education and outreach Projects such as NASA Explorer Schools (NES), FIRST and BEST Robotics, Science Engineering Mathematics and Aerospace Academy (SEMAA), the Aerospace Education Services Project (AESP) and center-unique projects such as the High School Aerospace Scholars Program (HAS) and Women in STEM High School Aerospace Scholars (WISH) at the Johnson Space Center (JSC) engaging them early in high school with NASA in STEM-related fields.

INSPIRE 2012 ACCOMPLISHMENTS

The OLC

- 2,054 students were selected to participate in the OLC, compared to 1,923 in 2011, an increase of 131 students (6.8%) from 2011. The students represent 49 states, Guam and Puerto Rico. Wyoming was the only state not represented. In addition, the OLC had U.S. students living in Canada, China, Kenya, South Korea, Switzerland, Taiwan, and the United Kingdom.
- Prior to participation in the INSPIRE OLC, students were requested to identity their race, ethnicity, and gender. 2,054 students provided information.

Gender, Race, and Ethnicity	#	%
Male	1242	60
Female	812	40
Caucasian	1118	54
Asian	605	29
African American	279	14
Other[1]	162	8
Hispanic	229	11

[1]Use of OEPM demographic questionnaire does not allow students to provide comments or clarification.

Grade Level	#	%
9th	402	20
10th	498	24
11th	571	28
12th	583	28

Student participants in the OLC are a highly motivated group with strong interests in NASA and STEM.

Student comments regarding OLC:

- *My participation in the INSPIRE OLC has improved my grades in my Engineering class. I can say that I received an "A" on my Principles of Engineering exam was affected by my participation in INSPIRE OLC.*
- *I was very glad to be selected as a member of NASA INSPIRE OLC this year. I have learned so many cool facts!*

Parent comments regarding OLC:

- *INSPIRE OLC is a wonderful opportunity to for students interested in STEM careers. My daughter was able to use some of the tools to enhance her knowledge of the skills required and it exposed her to activities that her high school could not provide. Being a part of the online community provided the necessary piece of exploration and confidence.*
- *INSPIRE gave me many opportunities to spend some great time with my daughter. We worked together on building the models and sat together as we listened to the weekly live chats (usually from the archives). It has given us a great way to connect and learn things together. My daughter's schedule is jam packed, as she just loves being involved in everything from band to math club to Science Olympiad and more. I love how she can go online and do work when it fits into her schedule.*
- *I am most pleased for my child with the exposure he got from the INSPIRE OLC program!*

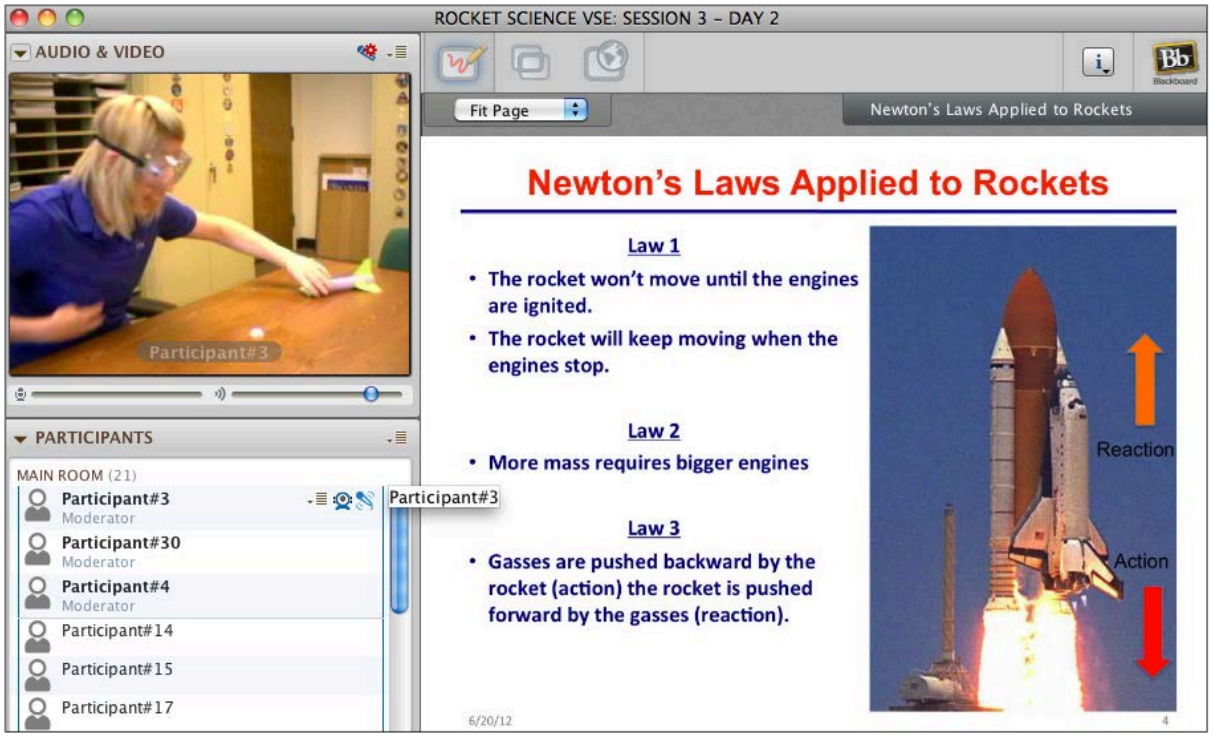
> ➢ INSPIRE is the only national K-12 project that has a sustained online learning community designed for students in the 9th through 12th grades

INSPIRE Virtual STEM Experiences (VSE)

In an effort to maximize NASA resources and provide unique STEM learning opportunities the OLC utilized Blackboard Collaborate, an online collaboration software, to bring innovative virtual workshops to the OLC members regardless of geographic location. The OLC offered, for the first time, three unique experiences exclusively for community members. The topics for the VSEs were *Rocket Science, Living and Working in Space, and Robots Among Us*. VSEs are online workshops presented virtually by INSPIRE Education Specialists. These workshops connected students to NASA subject matter experts, provided opportunities for peer collaboration, and demonstrated hands on activities relating to the workshop content that the students completed at home. The VSEs spanned across three days, with 2-3 hour sessions each day. Students who earned 1,000 points or more were eligible to register for the *Robots Among Us* VSE. The *Rocket Science* and *Living and Working in Space* VSEs were open to all OLC members.

Rocket Science

Four sessions of the *Rocket Science* VSE were offered to accommodate all registered students. Workshop content included history of rocket evolution, a breakdown of how rockets function, and explanations of how rockets will continue to change space flight in the future. Students were also instructed on the physics of rocket flight, including Newton's Laws of Motion and dynamics of propulsion. Rocket and propulsion experts from NASA's Marshall Space Flight Center presented LiveChats where they informed students about their careers and specialties, provided information on how to get involved with rocket organizations, and answered questions. Students were provided numerous activities from the NASA Rocket Educator Guide. Demonstrations of the activities were presented and then students were asked to complete the activities at home, and report their findings the following day. Students were separated into small discussion groups and discussed the activities at length. Students were encouraged to make modifications to the experiments, find practical applications to the models they built, and make video or image logs of their activity. A total of 80 students attended this workshop.



Screen shot of computer during Rocket Science VSE using Blackboard Collaborate online collaboration software.

Living and Working in Space

The *Living and Working in Space* workshop focused on how humans are able to live and conduct experiments in microgravity. Workshop content included a history of living and working in space, space food and nutrition, hydroponics, and space suit basics. Students developed a one-day menu for an astronaut aboard the International Space Station and created plant growth chambers using basil seeds flown on the space shuttle. Also, NASA experts from Marshall Space Flight Center, Stennis Space Center, and Dryden Flight Research Center presented LiveChats on topics of Living and Working in Space and informed students about their careers and answered student questions. A total of 66 students attended this workshop.

Robots Among Us

The *Robots Among Us* workshop was a special offering to those students who had earned 1000 points or more in the OLC. Two sessions of *Robots Among Us* was presented to accommodate all registered students. Workshop content included history of robots, identifying what qualifies as a robot, and hands on activities related to robotics. NASA experts from NASA's Jet Propulsion Laboratory presented LiveChats sharing with students NASA Robotics resources available and current information about The Mars Research Laboratory, Curiosity. Workshop participants also heard engineers from Johnson Space Center talk about Robonaut 2 and student VREP programming assignments. MIT specialists presented the Zero Robotics Team Challenge. Students also programmed their own robot with free online software and completed hands-on activities related to robotics at home. A total of 38 students attended this workshop.

The Virtual STEM Experiences proved to be a success as indicated through active student participation and positive student feedback. It is the intent of the NASA OLC to host more VSEs in the future.

Comments from students who participated in the Virtual STEM Experiences

- *The Virtual STEM Experience was exciting and educating. It allowed me to experience hands on activities that brought textbook information to life. In just three days I learned valuable information that I will take with me throughout my career.*
- *This was a very fun experience and I had a great time. I got to learn so much and it makes me all the more interested in a STEM career. I hope that I can participate in activities like this in the future as well.*
- *I think it was very organized and interactive. I learned so many new things and am excited for more experiences like this. The activities were really fun and make me all the more interested in pursuing a career in STEM.*
- *The VSE was completely different from anything else I've ever done. I think it was very well organized. We got to do a lot of things without ever having to leave our computers! I thought it was fun!*

Comments from external evaluators on effectiveness of the Virtual STEM Experiences

- *Overall, VSE's were a success in their first year. Nearly all students reported that they would recommend a VSE to a friend*
- *A fairly even distribution of students across grades participated in the VSE's.*
- *Students reported learning something new about NASA, enjoying learning when using NASA materials, thinking that NASA does important and exciting work, and being more interested in a career at NASA or in STEM as a result of the participation.*
- *Students described their VSE as "completely different from anything else" they had ever done. The VSE's represent a new approach to involving students utilizing technology and should be applauded for doing so successfully.*

125 individuals participated in one or more summer Virtual STEM Experience. The following is the demographic breakdown of participating students:

Summer STEM Experience Diversity	
Awarded laptop computer (National School Lunch Program)	15%
Male	62%
Female	38%
Disability	5%
Hispanic	11%

Summer STEM Experience Race	
Caucasian	56%
Asian	36%
African American	9%
American Indian	2%
Pacific Islander	1%
Other[1]	10%

[1]Use of OEPM demographic questionnaire does not allow students to provide comments or clarification.

Student surveys overwhelmingly indicated participation in Virtual STEM Experiences was beneficial.

	Rocket Science	Robots Among US	Living and Working in Space
I am more interested in a career at NASA or in STEM.	100%	95%	95%
I learned something new about NASA as a result of my participation today.	100%	100%	98%
I enjoy learning when I use NASA materials.	97%	97%	95%
I will do more activities about STEM.	92%	79%	88%
I will visit the NASA website.	63%	64%	70%
I will talk to my family about NASA.	65%	69%	68%
How likely are you to recommend a Virtual STEM Experience to others?	97%	97%	95%

INSPIRE Student Unconference

The INSPIRE Student Unconference was a unique collaboration between the OLC, the Kennedy Space Center (KSC) Educator Resource Center (ERC), and the employees of KSC. "Unconference" refers to a different type of conference where the students and their parent/caregiver handled all expenses and travel. Additionally, events at the Unconference were largely organized by student requests. Planning began with students meeting on the OLC to determine the goals and objectives of the Unconference. Based on their input, the ERC built a schedule, which met the students' expectations while maximizing center exposure. The Unconference was a three day experience in which the students and their parent/caregiver were able to participate in: special tours, unique educational opportunities, round-table discussions, and hear guest speakers. KSC personnel volunteered their time to brief students during facility tours and to serve as subject matter experts during panel discussions. A total of 22 KSC employees were involved in this event.

Demographics

- 36 Students, 35 Parent/Guardians
- 20 male, 16 female
- 15 minority students
- 8 NASA Centers
- 14 states and Puerto Rico

Student Comments from Unconference Participants

- *The Unconference motivated me to further pursue my interests in the STEM fields. I enjoyed every minute - thank you for this opportunity!*
- *The Unconference was an amazing and once in a lifetime chance to get to see many of the operating facilities at KSC. I will now be able to share with my friends the experiences I have had and hopefully inspire them to pursue a STEM and a NASA career.*
- *Getting to meet NASA scientists and engineers was really great and I particularly liked the talk by a NASA engineer about the probes that are going to be launched.*

Parent Comments from Unconference Participants

- *I am so appreciative of the opportunity that has been provided for my child to see the facilities and the work that has been done at KSC.*
- *There is so much we learned during the three days at KSC. You and your team did a fantastic job of organizing this event.*
- *Thanks again for your dedication to the INSPIRE program and our children.*

INSPIRE Students Build Mindstorm Robots

INSPRE Students Visit Orbiter Endeavour

INSPIRE LiveChats

INSPIRE LiveChats provide OLC students an opportunity to participate in presentations from NASA engineers, scientists and other experts. The expert puts together a presentation to share with the students, allowing the students to acquire a certain amount of knowledge about the subject, and then the remainder of the time is used for a question/answer session. This gives student the opportunity to directly interact with experts with whom they would not have had the opportunity to do so otherwise and allows students to see the broad range of jobs and careers available at NASA.

In FY12, all 9 NASA Centers, the Jet Propulsion Lab, Georgia Tech, Oklahoma State University and the Space Telescope Science Institute, provided the OLC LiveChats with subject matter experts. Topics covered a wide range of NASA efforts, with presentations such as “Space Weather: The Solar Connection,” “Science on the ISS,” and “Computer Flight Control.” Subject matter experts included Steve Zornetzer of Ames Research Center, Dr. Sten Odenwald of Goddard Space Flight Center, and Dr. Liz Warren of Johnson Space Center. LiveChats also offered a way to collaborate with other NASA programs like the Digital Learning Network and NASA EDGE. During FY12, the OLC hosted 63 unique LiveChats with a total of 3,929 students participating.

Screen shot **of NASA Edge LiveChat**

Screen Shot of Wilbur Wright LiveChat

INSPIRE Sponsors National Star Party

For the first time ever, INSPIRE students had an opportunity to participate in a coast-to-coast virtual Star Party. Students from across the nation observed the sky, recorded their results, and submitted their data through the OLC. Four opportunities were offered to observe and report observations, with a special LiveChat following each of the four events. 87 students participated in the four events. Those who participated were awarded a special INSPIRE desktop wallpaper featuring the constellation Orion.

INSPIRE Partners with NASA - Motivating Undergraduates in Science and Technology (MUST)

Eleven Motivating Undergraduates in Science and Technology (MUST) students volunteered to contributed to the OLC by sharing their interest in pursuing an education and career in science, technology, engineering, and mathematics (STEM) related fields with the INSPIRE community. They shared by writing short feature articles, which were posted as blogs on the OLC, or by participating in a LiveChat to share their experiences and answer questions. A special LiveChat was held where five INSPIRE alumni spoke on the topic of “Life after INSPIRE” with 44 students in attendance.

Real World-In World Engineering Design Challenge

The RealWorld-InWorld (RWIW) Engineering Design Challenge offered an exciting opportunity for OLC members to participate virtually in a group project to design either a sunshield for the James Webb Space Telescope (JWST) or a robotic foot for Robonaut 2 on the International Space Station. Students began work in early October by forming teams, assigning roles, and learning background information. Special LiveChats were held with RWIW sponsors to answer student questions. Students met together using Blackboard Collaborate to work together on their project. Teams also utilized the OLC Discussion Board to communicate and share information. Of the 20 teams selected to move into the virtual world, InWorld, for phase 2, seven were INSPIRE teams. Students worked with NASA experts and college student mentors to create their InWorld projects. INSPIRE Team Kepler won top honors for the Sunshield competition with INSPIRE Team Sunshielders selected as

runner up. INSPIRE Team Rocket was runner up for the Robonaut competition. Of the six national winning teams, three were INSPIRE teams.

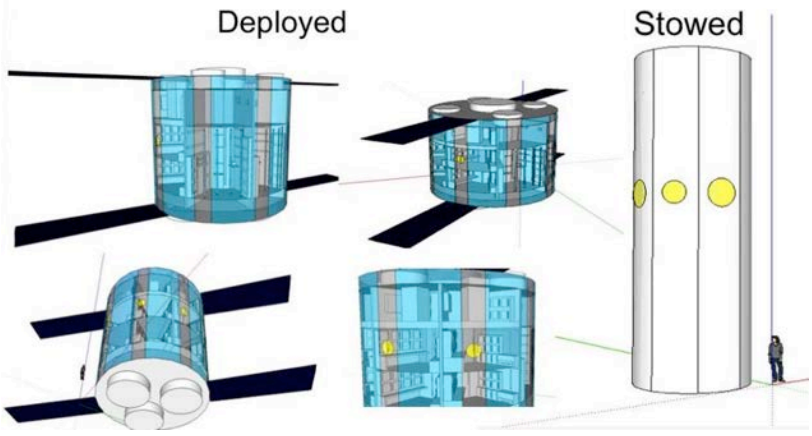
Comment from Winning INSPIRE Student: Team Kepler

If you're considering a STEM career, or perhaps if you're just casually interested in STEM subjects, the RWIW Challenge is for you—it gets you to think like a scientist and build like an engineer...only, you're building virtually! This challenge has given me practice in thinking critically and solving problems. It has given me confidence in my abilities and my work. It has given me a glimpse—my first taste—of the engineering process and has thereby strengthened my desire to pursue an engineering career.

INSPIRE Space Habitat Innovation Challenge

NASA INSPIRE partnered with Oklahoma State University's School of Mechanical and Aerospace Engineering to sponsor the 2011 Space Habitat Innovation Challenge. Participating INSPIRE teams designed and developed virtual models of NASA's next generation space habitats. The OLC teams collaborated "virtually" working together to solve the challenge, competing against school teams who had the advantage of face-to-face interaction. The winning team was from the OLC, demonstrating how students are learning to collaborate with others and connect through technology, essential skills in a knowledge-based economy. Students participating in this Challenge worked together to solve a problem, which involved the contribution and exchange of ideas, knowledge and resources to achieve a goal. This is an excellent example of how the OLC is leading the way in providing 21st century skills for INSPIRE students.

Forty INSPIRE students on 12 teams submitted projects to Oklahoma State University's Space Habitat Innovation Challenge. Three INSPIRE teams were selected as finalists and completed virtual presentations of their projects to students and faculty from Oklahoma State University's School of Mechanical and Aerospace Engineering. Submissions were judged on feasibility and design. The winning team, Team FireFly!, participated in a special behind the scenes tour at the Johnson Space Center to learn more about the Xhab project and to present their virtual model design to the Xhab scientist and engineers at the Johnson Space Center.



Space Habitat Innovation Challenge Winning Design

Team FireFly! Visits Johnson Space Center

Comment from member of Space Habitat Innovation Challenge winning team.

My trip to the Johnson Space Center was amazing. After a day of walking around the center and getting the opportunity to ask scientists and engineers about their projects, I learned about many new things that might have affected my work on the X-Hab challenge, researching energy sources and materials for life support.

Conrad Foundation's Spirit of Innovation Award Competition

Eighty teams (which included 10 INSPIRE students) were selected nationally as semifinalists in the Conrad Foundation's Spirit of Innovation Award Competition. The teams developed their innovations into full product proposals. 15 teams were selected to attend the Annual Innovation Summit at ARC in April.

INSPIRE Patch Competition

Each year members of the OLC are asked to design an official NASA INSPIRE Team Patch to be utilized throughout the OLC and on NASA INSPIRE official communications and products. In addition to designing a patch, students are also asked to write a description of the patch to explain the meaning behind the design. 114 Team Patch entries were submitted. The submitted patches were evaluated by the INSPIRE project team to make sure all competition criteria was met. 32 submissions were selected and voted on by the community. After five rounds of student voting, a winner was selected.

22011-2012 Winning Team

MARS Desert Research Station Challenge

The Mars Desert Research Station (MDRS) Challenge, sponsored by the Mars Society, provided a unique collaboration between the OLC and former INSPIRE students from the Georgia Institute of Technology (Georgia Tech). INSPIRE students were asked to submit research proposals to the Georgia Team outlining experiments to be performed during their simulation inside MDRS. From 17 proposals submitted, four were selected and their experiments were conducted. The MDRS crew shared the results of the experiments during a LiveChat.

Desire2Excel National Award

The OLC was a finalist and runner-up to receive the Desire2Excel Impact Award. The award winners were announced at FUSION 2012, 8th Annual Desire2Learn Users' Conference, in San Diego, CA.

The Desire2EXCEL Awards recognize organizations and institutions using Desire2Learn technology to deliver learning experiences that are innovative, collaborative and/or have a high, significant or extraordinary impact. The Desire2EXCEL *Impact* Award recognizes organizations and institutions that have an extraordinary impact on teaching and learning, service to students, leadership, and institutional effectiveness.

eINSPIRE Weekly Communication

The eINSPIRE is an electronic communication emailed to OLC members and their parents each week. The eINSPIRE has several different aspects, each one designed to give the students the most recent news from the OLC and NASA. The first major feature of the eINSPIRE provides a NASA related news event that is also highlighted in the OLC. A video is typically placed first thing to capture the students' eye and interest. The second major feature focuses on the exclusive activities available only in the OLC. The activity images are hyperlinked to the login website for the OLC. Other major features were added when necessary covering OLC news, new features of the OLC, upcoming events or challenges, or important opportunities and deadlines. The smaller column to the left of the major features provides the students with brief information. Items such as what is new in the OLC, details of the next LiveChat, news updates from NASA, and student discussion in the Discussion Boards are all featured in this column. There are several "clickable" items in the eINSPIRE connecting to material they can access with a single click. Also, the eINSPIRE has a unique login icon, enabling students to get to the OLC login website directly from the email.

Screen Shot of eINSPIRE

Center Unique Experiences

The OLC continues to serve as a student pipeline: Special efforts to publicize Summer STEM Experiences sponsored by NASA and other STEM organizations. As a result, two OLC students participated in internships at JPL, four at GRC, 8 at JPL (plus 4 former INSPIRE students at the undergraduate level), 3 at MSFC, and 2 at KSC. 85 high school students applied to LARSS, 63 of which were INSPIRE students. 10 students participated in the Women in STEM High School Aerospace Scholars (WISH) project online with five of these students also participating in WISH on site at JSC.

Student Advisory Council (SAC)

Each year since the start of the NASA INSPIRE OLC, a group of committed students volunteer to serve as advisors to the INSPIRE project. This group of students represents all grade levels and a diversity of NASA Center regions. The 2011-2012 council was made up of 19 members, nine

female and 10 male. Of the 19, two were 9th grade students, five 10th grade, seven 11th grade, and five were 12th grade students. These individuals were asked to participate in the SAC based on their high level of participation at the start of the year and because they expressed a high level of interest in creating a dynamic and interactive Online Learning Community.

Members of the SAC meet at least once a month during the school year. During these meetings, the SAC makes suggestions and preview improvements to the OLC, assess upcoming activities and challenges, relay concerns from the student community, and act as a direct bridge between the INSPIRE team and the OLC student members.

Online Peer Tutoring and Instruction Community (OPTIC)

OPTIC is a discussion board available on the OLC created for the purpose of giving students a place to seek and provide homework help. OPTIC was suggested by an OLC member and supported by numerous members. Students can also create video tutorials for aspects of STEM and post them in OPTIC for other students to have as a resource. In this environment, students are able to help each other with difficult STEM topics on a relatable level.

International Space Station Science Challenge

In collaboration with Teaching from Space and the ISS Program Science Office at NASA, INSPIRE host the International Space Station Science Challenge encouraging students from across the country to learn about NASA's science experiments performed on the International Space Station (ISS) and develop an interesting and informative project to help educate the world about ISS Science. Working individually or in groups, INSPIRE students select an ISS NASA-sponsored science experiment matching their area of interest and then develop either a podcast, PowerPoint, written report, or web page teaching the rest of the world about the experiment. Students had an opportunity to participate in three different sessions. Session 1: 49 students submitted a total of 38 projects; Session 2: 16 students submitted a total of 19 projects; Session 3: 6 students submitted a total of 7 projects.

INSPIRE Helps Prepare OLC Students for College

Five LiveChats to help prepare students for college were presented to Glenn Interns on site and OLC students virtually. The topics included Making Your Memory Work, Leadership In and Out of the Classroom, Writing Workshop, and Secrets to College Success. Presentations were presented by Oklahoma State University's Learning and Student Success Opportunity Center (LASSO) professional staff. A total of 71 students and one parent attended the five sessions.

PROJECT BENEFIT TO STRATEGIC GOAL 6

Performance Goal 6: 85 percent of elementary and secondary students express interest in STEM careers following their involvement in NASA education programs.

- Following participation in the OLC, 90% of students reported they had gained a better understanding of NASA's mission, were inspired to learn more about STEM, and wanted to take more STEM courses; and

- 88% of students reported being interested in a career at NASA following participation in the OLC.
- Between 95% and 100% of students participating in Virtual STEM Experiences reported being more interested in a career at NASA or in STEM as a result of their participation in that experience
- Of the students and parents who attended the INSPIRE Student Unconference, nearly all agreed or strongly agreed that the experience inspire them to learn more about STEM (92-100%), that they prefer to learn with NASA resources (92-97%), that they enjoy learning with NASA resource and materials (96-100%), and that they want to take more courses in STEM after learning with NASA (96-100%).

IMPROVEMENTS MADE IN FY12

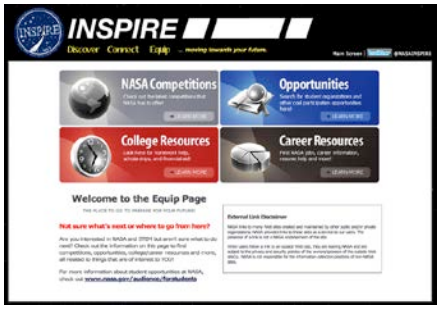
INSPIRE OLC Redesign

INSPIRE started the year with an updated and restructured OLC web space. The modernized website takes the best features of the FY11 website and brings it forward with a fresh innovative look and an enhanced interactivity, for all participants, based on recommendations of staff, evaluation results and student input.

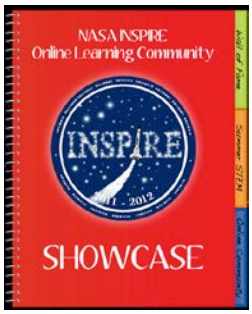
Screen Shot of News section on the Home page of the OLC

As a part of the redesign for the 2011-2012 INSPIRE OLC year, several changes were made to the layout of the Home page of the OLC. One of the major updates was the interface design of the News section. Previously, the INSPIRE news section was a long list of individual news postings resulting in important updates and announcements potentially getting "lost" as new News posts were added to the top of the list. With the new design, the News items are constantly scrolling, allowing the community members to see a vast number of News posts within a short amount of time. If a post catches an individual's eye and they want to see more about it, all they need to do is pause the scroll and read more or click on the image to read the full article. This single change has allowed the INSPIRE team to provide the community members with more NASA related news, more often and to better engage the community members in a variety of topics over a larger time frame as the posts no longer get "lost" in a long list of information. Additionally, the archive for all information is now available at the top of the page so all past information is easily accessible for the members.

As a part of the redesign to the entire OLC website, two main sections of the OLC were also updated: the Equip page and the Showcase.



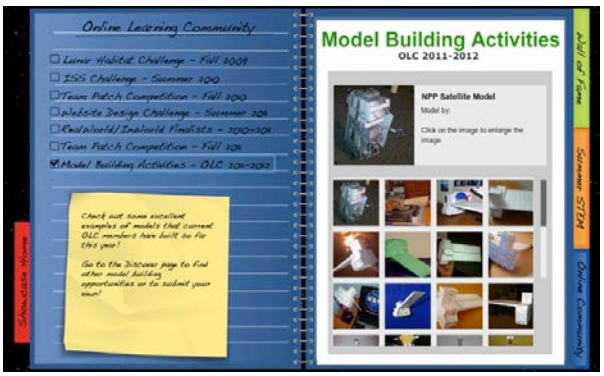
Screen shot of Equip page in the INSPIRE OLC



Screen shot of Showcase main page in the INSPIRE OLC

Equip: The Equip page was updated to make it easier for students to find the variety of NASA competitions, opportunities, and resources available for them and their parents. With easier to understand navigation and buttons, students are able to more quickly get the information they want and find out about of opportunities available to them.

Showcase: The Showcase unveiled a major facelift in the fall of 2011. Highlighting OLC member achievements both inside, and outside the OLC, the Showcase puts the community members in the spotlight. The showcase features a new Wall of Fame area where students can find an updated Leaderboard, competition winners and even an actual Wall of Fame where students are recognized for earning an award, recognition, or achievement in their state, region or at the national level. The Summer STEM Experience (SSE) area of the showcase features students at work and at play from past years including this past summer's SSE students. The SSE section includes abstracts, videos, photo journals, photo galleries, and more to show students who were not a part of these experiences the behind the curtain view of an INSPIRE SSE. The OLC area of the Showcase features work from past OLC members and also features current member work throughout the OLC year.



Monthly Themes

During the previous years, the INSPIRE OLC used weekly themes to guide the content found within the OLC and the creation of activities. After reading the comments from community members and studying the lessons learned surveys from team members, it was determined monthly themes with weekly sub-themes would better serve the community as a whole. These monthly themes have allowed the INSPIRE team and the community to delve more deeply into topics that, in the past, have only been explored at a surface level. The sub-themes have provided a basis for the deeper exploration of the broad monthly topics and have also provided topics for our weekly Thursday night LiveChats.

To spark interest in the monthly themes and to promote learning, both the Home page and the Discover page features a brief educational overview of the monthly theme topic. This section provides a brief introduction to the topic for those students who may not know much about these topics, which have included Gravity, Earth, the International Space Station and Aeronautics during the 2011-year each of which is archived via tabs on the Discover page allowing students to revisit these topics at a later date. If the community members are intrigued by the brief overview, additional educational links and links to articles found in the NASA portal are provided as well so that students may do additional research into the various topic areas.

Screen Shot of Discover page in the INSPIRE OLC

Activities

In direct response to student requests via discussion boards, surveys and the Student Advisory Council, the INSPIRE team have restructured the activities offered to the student community for the 2011-2012 OLC year.

This year, students are able to earn points through several types of activities. The newest of which are the Short Activities, the Model Building Activities, and the Monthly Theme Based Activities.

Short Activities: Short activities are designed so students can complete them in their spare time between school and extra curricular activities. These activities can be completed in approximately 30 minutes and typically provide a basic introduction or overview to a wide variety of topics. Some short activities are based on the monthly theme or weekly sub-themes but many short activities are based on current NASA events. Throughout 2011-12, 127 short activities were posted on the OLC with a total of 21,697 activities completed by the community.

Model-Building Activities: With model building activities, OLC members get to put practical skills to the test by building scale models of actual NASA satellites and rockets while learning about the missions and science behind each. Students document the process and then share their completed models with the INSPIRE team. 11 model-building activities were available to students during FY12 with a total of 511 models completed by the community.

Monthly Theme Based Activities: The Monthly Theme Based Activities are available year round and allow students to create more engaging and creative projects to express critical understanding of each of the monthly themes. For example, October's monthly theme was the International Space Station. October's Monthly Theme Based Activity places the OLC member in the role of a researcher by designing an experiment to be performed by astronauts on the ISS. Students are asked to demonstrate a cohesive knowledge of concepts related to the theme overall throughout their project and are then provided with written feedback and evaluation by the project team to allow the students to further develop both their understanding of the topic and their practical skills. Nine monthly activities were available to students with a total of 252 activities completed by the community.

Additional Changes in 2011-2012

- Featured NASA Center – each month a different NASA Center is featured so students can learn more about their region and the different NASA Centers across the nation.
- ePrizes – students can now earn digital prizes as they climb the leaderboard. These prizes take the form of computer desktop backgrounds that can be emailed to them and feature the 2011-2012 INSPIRE Team Patch winning design.
- Profile Pictures – based on a student suggestion, students can now select from ten images to use on their profile that will be visible as they participate in the discussion board. The profile pictures they choose can highlight an interest or showcase the number of years the student has been a member of the INSPIRE OLC.

Profile Picture Options for Students

INSPIRE PROJECT PARTNERS AND ROLE IN EXECUTION

As the primary project partner, Oklahoma State University (OSU) provides a professional staff of education and technology specialists to design and implement the OLC, providing student educational activities, challenges, weekly live video chats with NASA subject matter experts, daily news posts, blogs, discussion boards and polls. national recruitment efforts, and the OLC capability.

Third party, independent project evaluation is accomplished through the Technology for Learning Consortium, Inc.