

**Qwest Foundation for Education
Competitive Sub-grant Proposal Assurance Sheet**

Project Title: Out of the Ordinary-Out of this World Amount of Request: \$ \$6855.28
 Name of Certificated Teacher (or "lead teacher" if more than one): Michelle R. Ball
 Name of School currently teaching at: Sunnyside Elementary
 District Name: Idaho Falls District Number: #91
 Total number of teachers involved (if more than one): _____
 Approximate number of students impacted: 26 Grade level(s) impacted: Spectrum 1-3
 Content area(s) impacted: Science

- I certify that if I receive a Qwest Foundation for Education Grant –
- I agree to create a 5-minute video highlighting my project for the purposes of sharing best practices with other Idaho K-12 teachers.
 - I agree to do one presentation on my project to other Idaho K-12 teachers before October 31, 2011.
 - I agree to submit an electronic report to the Idaho State Department of Education before October 31, 2011.

Superintendent Name (print) George Boland	E-mail bolageor@d91.k12.id.us	Telephone 525-7519
Signature <i>George Boland</i>		
Principal Name (print) Dona Appelonie	E-mail apldona@d91.k12.id.us	Telephone 524-7880
Signature <i>Dona Appelonie</i>		
Teacher or Lead Teacher Name (print) Michelle R. Ball	E-mail ballmich@d91.k12.id.us	Telephone 524-7880
Signature <i>Michelle R. Ball</i>		
Technology Director (print) Camille Wood	E-mail woodcami@d91.k12.id.us	Telephone 525-7559
Signature <i>Camille Wood</i>		

Submit one digital copy (PDF format) of your proposal by November 19, 2010 via e-mail to:
 Jimmy Takala
jtakala@ede.idaho.gov
 208.332.6937

*Only one PDF file per teacher applicant will be accepted (this includes the Assurance Sheet). Faxes will not be accepted.

Abstract

iLearn Space, iUse Technology, iAm Student, iAm Innovation

Connecting Students with Space, Technology, and Innovation through the Apple iPad

Extraordinary! Innovative! Magical! These are words used by others to describe the Apple iPad, and I agree. Since receiving a personal iPad as a gift, I have become aware of its potential as a learning tool in the classroom. There are thousands of applications called APPS created especially for the iPad in education and the cost is either minimal or free. While browsing the App Store, I noticed how many were about the solar system. That is when I began to formulate the idea for using the iPad as a tool in meeting the state standards in science for the three grades I teach in a [Spectrum 1-3 classroom](#). In each grade level, one standard is consistent; Understand Systems, Order, and Organization. What greater system for students to understand and learn scientific laws and effects the components of the universe have on their daily lives ie, length of day, change of seasons, etc. than through the visuals on the iPad!

Space is not flat and cannot be understood through pictures, and further, these students live in a world where they no longer have to learn about space in abstract terms. Students will interact with the stars, planets, solar systems, and weather through iPad Apps such as ["8Planets"](#) ["Grand Tour 3D"](#) and ["Star Walk."](#) Students will use space science Apps to engage in the scientific process – from finding out how much they weigh on Mars and why it is different from what they weigh on Earth, or what planets may have water and what that means for biological life. Most significantly, they will see and interact with the subjects of their inquiry. They will become each others' teachers and hone their public speaking by working in groups of three to create a profile of a planet or constellation using ["GoSky Watch"](#) and then present it to the class. They will become anthropologists by using ["Ian Ripath's Star Tales"](#) website to explain to their classmates what legends American Indians, Romans, Greeks, and the Mayans created about these planets and constellations, and what these stories said about their cultures and societies.

They will do fact-finding activities on the solar system in apps [Sky Safari Lite](#), [Planets](#), [Stars New](#), STAR Walk, [Planet Facts](#), [SkyORB](#), and [Solar Walk- 3D](#). They will observe the future of exploration into the universe as if they were astronomers at a major planetarium with a state of the art telescope. They will be introduced to NASA and watch live video feed from the space station and Kennedy and Johnson Space Centers in the [NASA app](#).

From the data collection, they will create electronic and hard copy portfolios of their discoveries to share with parents, classmates, and others. Groups will create a slide show in [Keynote](#) app to be presented to the class. They will adapt a play "Vacation on Mars" to "Vacation in the Universe" to include the parts of the solar system instead of just one planet. The students will create a drawing using [Drawing Pad](#) app which will be printed on transfer paper and then ironed on to a t-shirt to wear during their presentation. They will identify and recognize the constellations and planets in the night sky specific to Southeast Idaho in the spring season.

The culminating activity will be "A Night at the Planetarium," when each group of students will portray an object in the universe. Parents and guests will be invited to view the night sky with their student as a guide. Using the [GoSkyWatch](#) app, they will take their parents outside to view the night sky and identify stars and planets that can be seen at that time of year. The play will be presented and students will also present dialogues of who they are as they take the role of their object, "We are the moon," "We are Jupiter," "We are Orion."

The iPad is extraordinary and innovative technology that will magically take students into the universe to explore as never before possible. It will engage them in learning with the touch of a finger and visually expand their perception of stars and planets that could previously be seen only with the aid of a high-powered telescope. They will understand their connection with the universe as they collaborate and create models and presentations. The iPad will make my classroom truly a planetarium for space exploration.

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Current Innovation

Teaching is my passion and one of my greatest sources of joy. My teaching philosophy is one of community and continual growth. My goals as a teacher are to teach my students how to think and learn and prepare them to be successful when they leave my classroom, to continually improve my teaching skills through trying new ideas and tools that are presented to me, support my fellow colleagues in their teaching, and enhance the profession by sharing my knowledge and ideas with other teachers.

Mine is a classroom that provides children with the opportunities to learn to their full academic potential and that helps to create lifetime learners who value knowledge as an essential part of their lives. Throughout my teaching career, I have used technology as a tool to help me do this.

By applying for technology grants from the INL and Maeck Family Foundation in the past, generous donations from the Education Foundation, and making my own investments, I have worked to create a living 21st century classroom. Innovation through technology has become integral to my curriculum and student learning including:

- Creating future CEO's skilled at presenting information through the use of the **interactive whiteboard**.
- Creating future engineers and researchers through my **computer stations**, which students use for research, reading and math activities
- Collaborating using the **LCD Projector**, which connects the laptop to the interactive whiteboard and the document camera so students can share their work
- Tapping into students inner scientist through a bug curriculum where they learned how to use a **document camera** to magnify and correctly label the insects they caught
- Helping students enhance their inner producer, director, and actor through teaching them how to use **video cameras** to direct and act in plays about the human body, the solar system, insects and others...
- Creating future graphic designers by a using **color printer** that students can use to transfer graphics they create onto T-Shirts to wear as costumes for the plays

With this daily exposure to technology, students in my classroom are experienced at using interactive touch screens and doing research that asks them to employ digital technologies and new media. The iPad will help take their hands-on learning opportunities to new levels because activities can be based around all the senses needed for scientific inquiry – visual perception, real time observation, recording, secondary research, reporting. They will be scientists, astronauts, anthropologists, and creators.

Young children think with their fingers. If they see something, they touch it. I have brought my own iPad into the classroom on multiple occasions for lessons and have observed how the iPad creates a link between a child's hand and the screen images – there are no barriers such as mouse or control between them and their thirst for knowledge. They will be taught to use the iPad in a way that will personalize instruction, address a variety of learning styles, and create a highly interactive classroom.

Ultimately, what they learn and *how* they learn will prepare them for life beyond the classroom.

PROJECT NARRATIVE

Connecting Students with Space, Technology, and Innovation through the Apple iPad

The following outlines a variety of lessons that use the Apple iPad to connect students with space, technology, and their own innovation. I ask Qwest Foundation to keep in mind that dozens of lessons on this space unit either have been or are in the process of being developed that integrate the iPad and iPad apps. It is not merely one lesson or one day – it is an expansive unit. Additionally, these iPads can be used for lessons outside of the space unit because of its flexibility and multi-faceted uses, especially in light that Apple and its partners have created thousands of [educational apps](#), and continue to add more to their list.

The project description begins as a broad overview, followed by an example of an actual lesson.

Project Description

Project Overview– Critical Steps for Every iPad Lesson

Step 1: CONNECT

Just like ET who could point his finger and connect with his world and planet Earth, so by the touch of a finger students will connect with the universe and their own creativity and innovation. By employing the iPad and its thousands of educational applications that relate to space and the universe – [“8Planets”](#); [“Grand Tour 3D”](#); [“Sky Safari”](#); [“Planets”](#); [“NASA”](#) and many more – students will critically examine and learn about the planets, constellations, solar systems, and the myths and stories associated with them interactively. This interaction will be visual, auditory, and based in team settings.

A member of the district technology team assigned to Sunnyside, in collaboration with myself, will instruct students on how to use the iPad. As has been found in the past when introducing students to new technology, this instruction will last one hour before the students have a working understanding of the iPad that will develop throughout the unit.

Step 2: COLLABORATE

A Spectrum classroom by nature is a collaborative community of different ages, learning styles, and learning levels. Learning how to discover and expand their knowledge *together* is as essential component of a child’s learning process, and further, by learning and growing together, each student acquires the skills and patience to be a mentor and teacher, as well as benefit from being a student to their peer mentors and teachers. Each lesson associated with the iPad will be one that requires teamwork and collaboration – a lesson within the lesson.

Step 3: COMPILE

In their teams, students will have a research question on which they will use their iPad applications to collect data. They will begin by making a hypothesis and then use their apps to research their question and test their hypothesis. Just like a scientist, they will record their data in their scientific notebooks, and use this data to answer their research question, and determine the validity of their hypothesis.

Step 4: CREATE

After following the scientific process, students will work in their teams to create a small presentation of their findings and share them with their classmates – moving them beyond learners and scientists to teachers.

Step 5: COMMUNITY

At the end of the unit, the classroom community will work together to create a special presentation for parents, teachers, and other students sharing what and how they learned. This will not only engage their parents in their learning process, it will also introduce the learning tool to other classmates. These iPads (and the lessons that accompany them) will then be available for other teachers and students in school to use.

Example Lesson: Out of this World

- Teams will select a constellation or planet that is visible in the Spring nighttime sky in Southeastern Idaho.
- One member will act as a Historian/Anthropologist, one will be a Technician, and the other will be Scientist (roles to rotate).
- They will work together to create a hypothesis for their research question before moving on to data collection.
- Using the several apps, students will collect data about the constellation/planet as their role requires to help them answer their research question
- As a team, students will create an electronic and hard copy portfolio of facts, legends, and drawings.
- They will answer their research question through their data, as well as determine the validity of their hypothesis. They will also add historical and anthropological commentary about their planet/constellation to create a more complete story.
- Students will present the findings to their classmates.

The Grand Finale “A Night at the Planetarium”

At the end of the unit, students will work together to create a play entitled “A Night at the Planetarium” to show to parents, teachers, and other students that they are (iAm) Scientists! They will wear a T-shirt depicting a constellation/planet they have studied (this will use technology already present in the classroom). They will draw these constellations/planets for their T-Shirts using visuals obtained from the iPad app Drawing Pad.

Parents, teachers, and students will rotate the room, just as the planets do, and visit teams of three that are stars, planets, and moons. When they visit each team (e.g., star, planet, moon), the students will talk about their properties (e.g., if they are Mars, they might talk about their heat, how their gravity differs from Earth, and how the Roman’s called them the God of War). In addition, each group will have created a visual of their planet/moon/star and have their iPad ready to show visitors what they look like at that moment using GoSky Watch app.

They will present a dialogue of facts about their chosen object and take the role of that item in “We are the Sun,” “We are Mars,” “We are Orion.” They will present a slideshow to their peers that was created in Keynote app. They will display the portfolio booklet of notes, drawings, and legends created from the research gathered from a variety of apps.

Project Team Member

Michelle Ball: Michelle Ball, a graduate of University of Utah, has been teaching elementary education for over 30 years, 15 of which have been in a Spectrum setting. In addition to being the recipient of a Fulbright Teaching Scholarship in which she developed elementary curriculum about Eastern Europe while living in Prague, she is also a twice published teacher. Beyond her teaching skills, her books, [Wake Up Brian](#) and [Brown Bag Science](#) illustrate her ingenuity and commitment to learning.

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Computer Technician: A member of the district technology team who is assigned to Sunnyside 3 days a week will instruct students on how to use the iPad. The technician also provides support for hardware and software installation and troubleshooting issues.

Other Teachers: These iPads will be used by other teachers. We are committed to sharing the innovation these iPads will bring to student learning in every classroom at Sunnyside.

Feasibility

Implementation: As mentioned earlier, a technician will teach students how to use the iPads. The learning curve on how to use the iPads will continue throughout the unit.

Students: They will share, collaborate, etc. as they have done in the past with other technology...

Technical Issues: The iPads automatically connect to the Internet (high speed) through Sunnyside's wireless network. This network also has a firewall which protects software from viruses and objectionable websites. On this note, after discussing the iPad with a trained Apple technician (Genius Technician), Apple software rarely acquires viruses because of their unique programming.

Finally, iPads, as are all Apple systems, can be programmed to update themselves automatically on a daily, weekly, or monthly basis (as the user requires), lowering the maintenance and upkeep of their products.

Sustainability

iPads, just as student learning, are not static. Their software, their apps, and their uses continue to develop as more is learned about them and ideas are created about their uses – just like students. I will stay in tune to new apps and continually create new lessons and enhance previous lessons.

Anticipated Outcomes and Impact

It is no secret that students of today live in a multimedia world where they use video as their primary form of engagement and communication. Teachers and administrators are looking for ways to present information to students that will not only spark their interest, but also encourage them to explore a subject more thoroughly. Meaningful exploration usually means deeper understanding, which translates into higher student achievement, whether measured via standardized tests or an increased graduation rate. Students learn in many different ways. The iPad allows children to learn through seeing, hearing, and touching and when they learn using more senses, they retain it.

T.H.E. Journal 1105 newsletter

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Scope and Sequence

This project will cover a time period of one trimester. Although this grant request is specific for exploring the world of space, it is a model for future units that will be developed through the use of IPAD and educational apps. Each student will make an electronic and hard copy portfolio by observing, collecting and evaluating using the following explorations through IPAD apps Planets, Star Walk for iPad, Earth, and Stars, Solar Walk, GoSkyWatch Planetarium, Solar Walk-3D Solar System, 3D planets, NASA APP, STARS New, SkySafari, PlanetFacts, Solar System, Quiz On: Space, Grand Tour, Earth, Moon, and Planets. The portfolios will be presented in the student led conference with their parents. They will also use the Drawing Pad App to create a drawing representing some part of their space item. The Note apps will be used for their note taking. Using the Keynote apps students will create a slideshow presentation.

- Students will explore how NASA uses images and videos
- Explore links to all the NASA centers
- Explore the space station and find out exactly where it is at and has been
- Understand moon phases
- Learn constellation names
- Evaluate the earth composition and structure, gravity, and atmosphere
- Understand the geology of the moon
- Observe the moon and its phases
- Understand Systems, Order, and Organization
- Students explore the relationship between the sun and the earth
- Understand scientific theories of origin and subsequent changes in the universe and earth systems
- Explain the reasons for the length of the day, the seasons, and the year on the earth
- Explain why years are different on each planet
- Understand concepts and process of evidence, models and exploration
- Develop a notebook to understand the moon phases, evaluation, rising data for the sun, Venus, Mercury, Jupiter, and Saturn
- Identify and locate stars, planets, and the constellations
- Learn, draw, and identify constellations
- Observe the current location of the planets weekly
- Plot and show the position of all exoplanets
- Understand the planets mass, radius, distance from the sun and internal structure
- Create a model of the solar system and compare and contrast the planets
- Create their own planet and identify its properties
- Search stars and sort by name, distance and magnitude
- Compile constellation mythical images, boundaries and patterns
- Identify and locate stars, planets and constellations in the night sky in a gathering called "Night at the Real Planetarium."
- Create a slideshow
- Perform a play where each student represents the planets, asteroids, comets, meteors, constellations
- The culminating activity will be a "Night at the Planetarium" for parents and guests.
- Create a descriptive dialogue of their chosen item ("We are the Moon and Its Phases") in the universe to perform the evening of the "Night at the Planetarium." This will also be presented to the other students in the school.

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Budget Narrative

An iPad isn't just the best device of its kind. It's a whole new kind of device.

All of the built-in apps on iPad were designed from the ground up to take advantage of the large Multi-Touch screen and advanced capabilities of iPad. And they work in any orientation. So one can do things with these apps that you can't do on any other device.

A large, high-resolution LED-backlit IPS display (9.56 x 7.47inches). An incredibly responsive Multi-Touch screen. And an amazingly powerful Apple-designed chip. All in a design that's thin (0.5 inches) and light (1.5 pounds). It is 1024-by 768 pixel resolution at 132 pixels per inch. It has fingerprint-resistant oleophobic coating. The A4 chip inside iPad was custom-designed by Apple engineers to be extremely powerful yet extremely power efficient. iPads get up to 10 hours of battery life on a single charge.

<http://www.apple.com/ipad/>

The iPad at a cost of \$499 is 16GB with wi-fi capabilities. Purchasing eleven iPads will provide 10 for the student use and one for the teacher to use when needed, but could also be used by students. However the iPads use the newer wireless protocol and so even though Sunnyside currently has wireless access points an upgraded one would be placed by this classroom. The cost for the Cisco 802.11n is \$587.05 and an added cost of \$56.00 for a Smartnet fixed internal antenna.

The case will protect and also serve as a stand for ease of use so it can be set at an angle. The applications have a minimal cost or are free. The adapter allows for the iPad to be connected to an LCD projector for students to display their slideshows. One technical note, unlike the computer, the display on an iPad cannot be cloned or shared except in the slideshow apps. This is one of the reasons that students need individual iPads for exploration and discovery of these exclusive apps.

Students will do investigative research from the following apps.

Stars New	free
Sky Orb	free
Grand Tour 3D	free
Planets	free
PlanetFacts	free
NASA	free
Go Sky Watch Planetarium	free
Drawing Pad	\$.99
Planet New	\$.99
8 Planets Pro	\$2.99
Sky Safari Lite	\$2.99
Solar Walk	\$4.99
Keynote	\$9.99

Students will create a slideshow in KeyNote to display on the interactive whiteboard using a projector and the iPad VGA adapter-

KeyNote- \$9.99-Keynote, the powerful presentation application for Mac, has been completely redesigned for iPad. It makes creating a world-class presentation, complete with animated charts and transitions, as simple as touching and tapping.

Students will create a drawing of their object to be printed on transfer paper and then ironed on a t-shirt to be worn at the "Night at the Planetarium" activity.

Drawing Pad \$.99-The stylish and elegant look and feel give you the best drawing experience you can get for the iPad.

Students will take notes as they research using the Note apps

Note- comes on iPad

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Budget Spreadsheet

Activity	Materials and Supplies	Capital Objects	Quantity	Price Per Unit	Sub Total
Students will research their selected astronomical object in specific apps for the iPad		Apple iPad-16GB	11	\$499.00	\$5489.00
iPad will be protected from damage		Case for iPad	11	\$39.00	\$429.00
Students will access the internet for research	Upgraded Wireless Access Point	Cisco 802.11n	1	\$567.05	\$567.05
Students will access the internet for research	Upgraded Wireless Access Point	SMARTNET fixed internal antenna	1	\$56.00	\$56.00
Students will research their selected astronomical object in specific apps for the iPad	Apps for the iPad				
	Stars New		11	free	0
	Sky Orb		11	free	0
	Grand Tour 3D		11	free	0
	Planets		11	free	0
	PlanetFacts		11	free	0
	NASA		11	free	0
	Go Sky Watch Planetarium		11	free	0
	Drawing Pad		11	\$0.99	\$10.89
	Planet New		11	\$0.99	\$10.89
	8 Planets Pro		11	\$2.99	\$32.89
	Sky Safari Lite		11	\$2.99	\$32.89
	Solar Walk		11	\$4.99	\$54.89
	Keynote		11	\$9.99	\$109.89
Students will display slideshow to classmates and parents from iPad to Interactive Whiteboard		VGA Adapter	1	\$29.00	\$29.00
TOTAL					\$6855.28