New Mexico STEM Network
Southern Hub
empowered by Innovate+Educate

NM STEM Network Annual Report 2011
Year One: Seeding STEM Education in New Mexico, Southern Hub

Executive Summary

Innovate+Educate launched the NM STEM Network in September 2010, believing that real change and transformation in education requires leadership from industry, government, education administrators, teachers, parents and students all working together. This report outlines the progress of the NM STEM Network after the first year of activities, showing tremendous alignment of activities in the region as well as funding in the region.

Innovate+Educate entered into a collaborative agreement with the southern region including NMSU, Gadsden Independent Schools and other lead partners in fall 2010 to move forward on the development of the first HUB in the NM STEM Network – the Southern Hub.

The goal of the New Mexico STEM Network is to address the critical issue in New Mexico of how to prepare students with a solid STEM education that prepares them ready to enter college and careers. In partnership with NMSU, the Gadsden Independent School District and Dona Ana Community College, the Southern Hub of the NM STEM Network was officially launched. Senator Jeff Bingaman and his southern team led by Melanie Goodman invited key participants to the launch event that was held at Encanto Hotel in Las Cruces, New Mexico on September

We are thrilled to report that our first year was a great success with the opening of the Innovation Center in Gadsden and the Seamless Summer of STEM program that coordinated more than 40 camps throughout the summer. During June and July, over 600 students and 100 teachers, at little to no cost, participated in a wide range of programs including a Robotics camp led by Lockheed Martin and a Space Academy camp led by the New Mexico Museum of Space History. Yvonne Lozano, Project Director, Southern HUB

Why STEM in New Mexico?

The national high school drop rate is 31%. In New Mexico that rate exceeds 50% in many districts and is high as 62% for Hispanic youth. All jobs, regardless of type require some level of STEM competency and yet the National Defense Industrial Council reports that 74% of 5th through 12th graders are not interested in or do not have access to math and science courses required for a technical career. By 2020, is is estimated that close to three-fourths of the jobs available will require skills in science, technology, engineering or mathematics. Job seekers who lack training in these "STEM" disciplines will be forced to compete for a dwindling pool of low-wage jobs.

Can you do the math?

We have a significant and growing skills gap problem in New Mexico. Even in this economy employers have jobs they can't fill due to a lack of qualified workers. If we wish to remain economically competitive as a state, we must unite our 321 independent STEM programs across the state and begin working together to build momentum and permanently transform STEM education in a meaningful way. The NM STEM Network is our solution - by seeking to align the key stakeholders of New Mexico's future STEM workforce we can have a much greater collective impact.

Why a Network?

A network provides a platform for individuals doing the work to share their insights, concerns and learning at the local level so it can be applied more broadly to impact education as a whole. By networking all STEM efforts throughout the state, it increases the potential and likelihood for successful programs to scale. Across the network we're creating Hubs – the region where the work actually happens but with the common goal that all work will be available and shared beyond the Hub.

The Southern Hub

The Gadsden Independent School District (GISD) volunteered to be the first district to fully participate in the NM STEM Network, with the vision to become a resource for the entire state. In partnership with Dona Ana Community College, NMSU, Las Cruces and Hatch Public Schools, GISD and Innovate+Educate built a roadmap to redesign access to and implementation of STEM education throughout the region. Gadsden took the leadership under Superintendent Cynthia Nava to develop the seat of the hub and launch the Tri-Border Regional Innovation Center. The Center was launched in June 2011.

The Gadsden Independent School District is 98% Hispanic, 100% of its students qualify for free lunch and 31% are English Language Learners (ELL). In the past 5 years, substantial gains have been made in Math and English scores. It is also home to Santa Teresa Middle School, one of the state's three "Blue Ribbon Schools." Successes here could easily be applied to any school in New Mexico as well schools across the country with growing numbers of ELL students.

Financial Model and Key Financial Outcomes

…THIS, WE BELIEVE is the key to success for any STEM Network, a collaboration that realigns the investments to advance STEM education at the grassroots level…

.Jami Grindatto, Intel Corporation, Director, Corporate Affairs, Southwest Region U.S

The Funding model for the NM STEM Network is to provide a network that will maximize collective impact through a partnership between public and private partnerships. In Year 1, there was a 100% match provided between the public and private partnership. In other words (or in hard dollar terms), the industry donors received 100% match of public dollars on their investments, and the public partners received 100% matching on their dollars from private industry.

Investment model Year 1: Total investment to STEM Education $330,755

Public Match:
Funding by Public Partners (Gadsden Independent Schools, Las Cruces Schools, NMSU)

Bussing of Students to Seamless Summer (Transportation)	$ 15,000
Presenters/STEM Experts/Professional Development	$ 86,000
Director STEM .75 FTE	$52,000
Campus Camp Teachers	$ 2,000
Seamless Summer Intern	$ 1,600
Supplies and Printing	$ 200
Total Investment (Public)	**$156,800**

Private (I+E Funders) Match:

STEM Expert – Digital Media Camp	$ 5,000
Camp Monitor, Carl Sullivan, GISD	$ 2,500
NMSU RETA	$11,000
Seamless Summer Activities	$ 6,800
NMSU College of Education/STEM Center	$33,000
Programs	$10,000
Scholarships and Sponsorships	$26,000
Travel	$ 4,800
Project Director (1 FTE)	$60,000
Pass-through to Lockheed Martin (Las Cruces)	$ 6,000
Event Hosting Expenses	$ 600
Operations	$12,300
Total Investment (Private)	**$177,000**

In-Kind Services:

Student Nutrition Program	(Value $3355)
Technology Equipment & Support	(Value $3600)

Total Public/Private/In-Kind Year 1 **$330,755**

NM STEM Network Partners – Year 1

In our inaugural year, we convened an extraordinary group of New Mexico thought leaders to help launch the Southern Hub of the NM STEM Network. Our success in the first year is a direct result of their insight, expertise and dedication.

Partner	Role
Jamai Blivin, Innovate+Educate	Creator of NM STEM Network, facilitating partnerships, aligning industry resources, managing overall network
Senator Nava (Superintendent at time of launch, Fall 2010)	Policy and administrative leadership for GISD and develop policy at state level to support STEM initiatives across NM
Yvonne Lozano, GISD &Innovate+Educate STEM Lead	Oversight for program implementation and all teacher professional development; support outreach and communication
Jan Morrison, TIES Teach & Battelle	Strategic oversight, connect NM STEM Network to other state STEM Networks, work closely with Innovate+Educate on strategy, sustainability, policy and scale
Dr. Brian Ormand, NMSU	Work with Dona Ana CC and NMSU to provide dual credit options for students, facilitate communication between all hub partners and main point of contact for disseminating learning to whole network
Dr. Sussie Bussman, NMSU, RETA	Teacher professional development including virtual trainings for regional sharing
Dr. Susan Brown, NMSU, Director of the STEM Center Dr. Karin Wiburg, NMSU	Hub leadership and coordinate STEM Center programs and resources with Hub partners
Dr. John Walker, Dona Ana Community College	Dual credit and career pathway alignment
Randall Hayes, Director of NM Museum of Space History	Innovative programming to students, facilitate opening of Innovation Center
Linda Hale, Hatch Public Schools	Provide Digital Camp to students in Hatch Schools during Seamless Summer of STEM
Dr. Tom Ryan, Albuquerque Public Schools, Education 360	Consult with district on building the technology infrastructure as well as providing models of technology integration into the classroom. Seed Education 360 in the region.
Dr. Enedina Vasques	NMSU, Helped with Camps and Launch of Innovation Center, Key Collaborator in Launch
Bobbie Eichort, Las Cruces Public Schools	Work with NM STEM Network to provide programs in Las Cruces for students to engage with Seamless Summer of STEM.
Tracey Bryan, The Bridge of Southern NM	Collaborate with Innovate+Educate on engaging industry leaders with education efforts

Key Outcomes: September 2010 to September 2011

The Tri-Border Innovation Center (TBIC)
The Innovation Center opened its doors in May 2011 providing the region with access to high quality STEM learning and outreach. The decision was made to launch this center to provide a place for the convenings and activities of the Southern HUB, and to serve as a "home-base" for the NM STEM Network Southern HUB. The Center was used as the center of the Seamless Summer of STEM, of which the summer camps from across the region convened and collaborated throughout the summer to engage youth in STEM programs.

Key Financial and impact Metricts:

Overall Statistics

Total students served: 619, 450 in Las Cruces; 149 in Gadsden; 20 in Hatch
Total teachers served: 100
Funding provided by the NM STEM Network:
Funding Leveraged: $330,755

Seamless Summer of STEM 2011
Seamless Summer of STEM was created to connect summer STEM programs throughout the Southern Hub. The Seamless Summer of STEM began on June 6, and ended July 28, 2011. During this 8 week period of student engagement, the projected numbers were surpassed, and the engagement and results were better than expected for the first year. .This effort involved deep collaborations and coordination across multiple communities, schools, organizations and industries to engage parents, students, teachers and workforce employers throughout the summer.

Goals

1. Offer multiple STEM summer camps at little to no cost throughout the Southern Hub in June & July of 2011
2. Increase awareness and understanding of STEM for parents through significant outreach and ease of access to information about camps
3. Engage local organizations and industries to provide programming and resources
4. Have students and teachers actively participating in STEM activities not part of their in-school curriculum

Collect data on key outcomes of program to determine success and areas for improvement

Key Outcomes

1. Funding was provided by existing program and district resources as well as by Innovate+Educate. Almost all the camps were free or low cost.
2. Innovate+Educate built and powered a free website: www.seamlesssummer.com that provided one location for all camp programs including dates, descriptions, locations and registration information. School leaders and community volunteers organized major outreach to parents and students at all income levels to encourage participation.

3. See list of Program Leaders
4. Student & Teacher Participation: See Metrics
5. Collect data on Key Outcomes: See Metrics – beginning September, 2011, the Southern HUB has entered into a partnership with NMSU to track the success of STEM learning through the Seamless Fall and Seamless Spring students.

Metrics:
Communities: Las Cruces, Gadsden and Hatch
Total Number of STEM Camps, Year 1: 41
Total Number of Participating Students: 619
Total Number of Participating Teachers: 100
Total Number of Unique Visitors to Website: 1,544 (75,000 total hits) From April to July
Total Budget:

Program Leaders
Innovate+Educate, GISD, Lockheed Martin, NMSU, New Mexico Museum of Space History, Project GUTS, NMSU STEM Center, NMSU College of Education, Dona Ana Community College, Las Cruces Public Schools, Camp Innoventure, MathSnacks, SEMAA, RETA, Scientifically Connected Communities (SC2)

A few Highlights of Seamless Summer STEM Camps

Lego™ Robotics Camp with Lockheed Martin
Using Legos to build robots 6th-8th graders gained hands-on experience of science and technology to build technical skills that inspire innovation, self-confidence, communication and leadership. Volunteers from Lockheed Martin supported the students in the design and building phase by assisting in research, crafting a solution and how to collect & document results. But they just thought they were building cool robots with Legos!

Introduction to Engineering Design Weeks 1 and 2
Middle school stduents from across the region participated in introduction to Engineering Design. Project Lead the Way was the crux of this camp, and mini-projects were developed to engage and move students into engineering interests.

Multi-Media Camp with Josh Silver
Twenty 6th – 8th graders became young filmmakers learning multi-media technology and software processes. Their project was to first learn about diseases, then how to educate the public by creating a Public Service Announcement (PSA). The PSA video introduced them to creative story development through a visual medium. The process of filmmaking from story to edit gave them hands-on, interaction with STEM skills all while making them feel like Steven Spielberg!

MathSnacks
We use math for almost everything, we just don't realize it – MathSnacks brought teachers and 5th, 6th and 7th graders together using technology to teach math. By integrating

technology into math lessons, teachers found new ways to demonstrate key concepts and students gained hands-on insight into both technology and math and how they are connected.

Key Outcomes listed by Program Leaders:

- Middle and High School students were engaged in technology driven Science, Math and Engineering projects (STEM) and activities that are not taught or experienced in the regular curriculum.
- The students that attended these camps engaged in high level enrichment experiences with presenters and instructors who are not necessarily classroom teachers, but are employees of agencies, universities, and organizations that support "out-of-the-box" experiences for students that relate to the work environments.
- Students had enriched summer activities that they had never had or experienced before this first year of Seamless Summer.
- Student interns from the high schools had the opportunity to engage in overseeing, supporting, monitoring and being role models for the middle school students that attended the camps.

Quotes from Teachers and Students

"Students, teachers, and the Lockheed Martin volunteers are all looking forward to what future opportunities STEM will provide for Las Cruces, New Mexico."

"We were able to get a wide range of students 5th grade to 9th from more schools. The best benefits of the seamless summer GUTS was that students had hours to investigate models. They could learn a procedure and practice a modification because they were in class 4 hours a day. Also the experienced students were assistant facilitators because they were so excited about what they know. The students were also able to troubleshoot code for me--they really passed me quickly--learning to use the models library. It was an amazing experience. I appreciate the opportunity so much."

"During the 5 day camp students engaged in rocket activities through building straw powered rockets. The winner of the competition launched the rocket 32 feet!"

"This multimedia camp it has been the best summer program I have seen so far. Our teachers were so helpful when I didn't know how to do some of the things like create a movie, film a movie and how to take pictures and video correctly. Thank you to all my instructors for all you have done for me and everyone else."

Future Growth in the Southern Hub
As a result of the success of the Seamless Summer of STEM program, Yvonne Lozano, the Southern Hub STEM Leader is expanding the program to offer Seamless Fall of STEM 2011 and Seamless Spring of STEM 2012.

Future Goals for the NM STEM Network

Goal #1 – Continued Alignment and Collaboration to advance STEM in NM
In November 2011, Innovate+Educate is launching the NM STEM Network Social Networking website through the New Mexico professional networking platform, ***Foorumnm.com***. The NM STEM Network site will allow everyone involved in NM STEM education and workforce to communicate with each other in one place via this social networking tool. This site will connect to the NM Epscor funded database of STEM programs www.NMSTEM.org

Key features on the site will include:

Share ideas, successes and events
Get support and feedback for your STEM initiatives
Learn about STEM development across the state
Grow your STEM community and network

When the site launches in November, an invitation to join will be emailed to the Innovate+Educate NM STEM Network mailing list. If you would like to be added to the mailing list, send an email to dvargas@innovate-educate.org. Subject Heading: NM STEM Network Mailing List

Goal #2 – Expanding to another HUB

In October, 2011 Innovate+Educate will partner with the Office of Congressman Ben Ray Lujan to convene key stakeholders in the northern NM districts. The focus of this summit will be STEM and Workforce – How do we create an environment that will move the region to a STEM-capable Workforce? The future of this HUB will be determined by the outcomes of the summit and the leadership that organically arises from the summit. We believe Northern NM has a unique opportunity to lead a STEM Workforce HUB with key partners including Regional Development Corporation (RDC), Los Alamos National Laboratory, NM Technology Council and the NM Department of Workforce Solutions.

Goal #3 – Expanding our relationship with Sandia National Laboratories and AFRL (Air Force Research Laboratory) with a special focus on defense and security workforce in Central NM region. This work is expected to occur in the second half of 2012.

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