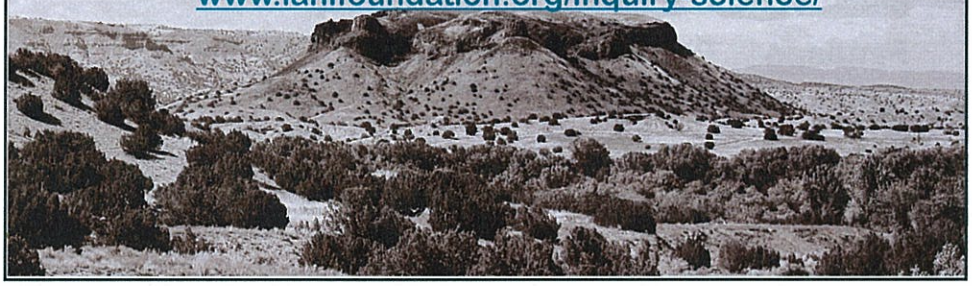
LOS ALAMOS
NATIONAL LABORATORY
FOUNDATION

INVESTING IN HUMAN POTENTIAL

Helping Our Children Learn

Bringing Inquiry Science to Northern New Mexico

www.lanlfoundation.org/inquiry-science/



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Inquiry Science Ed Consortium (ISEC) Model

School-wide implementation K-6
- Year1: 10 schools in 4 districts
- Year2: 12 more schools, 1 more district

PD – Summer Institute, 2 Conferences per year

Teacher Support
- Kits provided & refurbished (Science Resource Ctr)
- Science Literacy Coaches (SLCs)

Administrator & School Board Support

Robust evaluation

Schools fund SLCs, stipends for PD, Kit costs

LANLF/LANS fund overall coordination, evaluation, Kit management (refurbishing, distribution)

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Cohort 1 (began in Fall 2010)

Española	ETS-Fairview Elementary
Española	Hernández Elementary
Española	James H Rodriguez Elementary
Española	TEQ-Quintana Elementary
Mesa Vista	El Rito Elementary
Mesa Vista	Ojo Caliente Elementary
Peñasco	Peñasco Elementary
Santa Fe	Amy Biehl
Santa Fe	Aspen Community
Santa Fe	Salazar Elementary

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Cohort 2 (began in Fall 2011)

Española	Abiquiu Elementary
Española	Alcalde Elementary
Española	Chimayó Elementary
Española	Dixon Elementary
Española	Los Niños Kindergarten
Española	Mountain View Elementary
Española	San Juan Elementary
Española	Velarde Elementary
Pojoaque	Pojoaque Intermediate & Grade 6 Academy
Santa Fe	Piñon Elementary
Santa Fe	Sweeney Elementary

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ISEC Year 1 Kits

K) Myself and Others (Insights)
G1) Pebbles, Sand and Silt (FOSS)
G2) Soils (STC)
G3) Sun, Moon, Stars (FOSS)
G4) Rocks and Minerals (STC)
G5) Land and Water (STC)
G6) Solar Energy (FOSS)
Balls and Ramps (Insights)
Balance and Motion (FOSS)
Solids and Liquids (STC)
Sound (STC)
Magnetism & Electricity (FOSS)
Mixtures & Solutions (FOSS)
Levers & Pulleys (FOSS).

Kits added in Year 2

K) Weather (Insights)
G2) Plant Growth & Dev (STC)
G4) Animal Studies (STC)
G6) Environments (FOSS)
G1) Organisms (STC)
G3) Human Body (FOSS)
G5) Microworlds (STC)

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TEACHER'S INSTITUTES

August 2 -6 , 2010, and
July 28-29, 2011 Cohort 1; and
August 1-4 , 2011 Cohort 2
Carlos F. Vigil Middle School
Español

Teacher Results

ISEC Teachers' Institute 2010 & 2011

Grade	Unit	n	Pre	Post	Gain
3	Sun, Moon, Stars	27	65%	79%	14%
3	Sound	33	61%	76%	16%
4	Rocks & Minerals	22	71%	83%	12%
4	Magnetism/Electricity*	10	54%	78%	24%
4	Animal Studies**	13	88%	91%	3%
5	Land & Water	33	69%	82%	13%
5	Microworlds**	17	76%	86%	10%
6	Solar Energy	26	75%	85%	10%
6	Levers & Pulleys	25	46%	73%	27%

* Data not yet available for 2011 ** New Kit for 2011

Making It Happen!

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Role of the SLCs

Classroom support/problem solving
Model Lessons/Co-teaching
Proctoring Pre/Posttest
Help with materials management
Liaison to the project

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ISEC Evaluation

Conducted in collaboration with the participating Districts and Edvance Research, Inc.

Aggregated results, *individual results confidential*

- Teacher Pre and Posttests
- Student Pre and Posttests
- NM Standards-Based Assessment
- Random sample of classrooms observed
- Random sample of Student Notebooks analyzed

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ISEC Student Results: Fall 2010 & Spring 2011

Grade	Unit	n	Pre	Post	Gain
3	Sun, Moon, Stars	169	26%	51%	25%
3	Sun, Moon, Stars	197	26%	65%	39%
3	Sound	196	29%	55%	25%
3	Sound	157	31%	60%	29%
4	Rocks & Minerals	230	26%	53%	27%
4	Rocks & Minerals	163	33%	56%	23%
4	Magnetism/Electricity	164	12%	49%	37%
4	Magnetism/Electricity	228	16%	45%	29%

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ISEC Student Results: Fall 2010 & Spring 2011

Grade	Unit	n	Pre	Post	Gain
5	Land & Water	223	49%	64%	15%
5	Land & Water	201	46%	61%	15%
5	Mixture & Solutions	189	12%	26%	14%
5	Mixture & Solutions	164	14%	33%	19%
6	Solar Energy	101	20%	55%	35%
6	Solar Energy	260	31%	59%	28%
6	Levers & Pulleys	249	7%	42%	35%
6	Levers & Pulleys	144	7%	43%	36%

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Propensity Score Match Student Comparison

307 ISEC students were matched with 307 control students
For Grade 4 NMSBA Science, Math & Reading
Hypothesized it would take 3 years to show significant gains
For 2011 there were no significant difference between ISEC and non-ISEC students

Science	**English Language Learners**
Math	**Free & reduced lunch**
Reading	**Male/Female**

No evidence of an "Implementation Dip" which research has shown to be true in some curriculum interventions in the first year of implementation

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NSRC LASER i3
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The LANL Foundation is now a partner in the

NSRC U.S. Department of Education
Investing in Innovation Validation Grant

NSRC Leadership and Assistance for Science Education Reform (LASER) Model: A Systemic and Sustainable Approach for Achieving High Standards in Science

Referred to as the LASER-i3 Grant or Research Project

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NSRC LASER i3
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National Science Resources Center

Who Are They?
The NSRC was founded in 1985 as an organization of the National Academies of Science and the Smithsonian Institution. 25 years later continues as a unit of the Smithsonian Institution

Mission:
Transforming Science Education

Goals:
Improve Student Achievement and Teacher Success
Create Sustainable/Scalable Systems for student & teacher success

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NSRC LASER i3
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What is the i3 research project?

- 5 year study FY 2011 – FY 2015
- Commenced 10/1/10 – NM joined in 4/11
- A validation study of the LASER model
- 3 regions (NM, North Carolina, Houston) representing up to 75,000 students in urban and rural areas
- An independent research study including RCT (randomized control trials) and Case Studies
- Center for Research on Education Policy – CREP at U of Memphis

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Why is this important?

- Results will help inform the reform work in science education. The results can be used to strengthen current, as well as scale, new elementary and secondary programs
- Work will create and improve products and services that can benefit other states and regions currently or planning on implementing the NSRC LASER model
- NSRC Science Education Learning Network of thousands of professionals representing education, business, and government will benefit from this work as well as the work of other i3 projects

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Basic LASER Model

- School-wide implementation Grades 1-8
  - Schools matched in pairs
  - Approximately 20 pairs randomly selected
  - 1 school in each pair will be Phase I (experimental)
  - 1 school in each pair will be Phase II (control)
- Phase I teachers implement 1 new Kit per
  - 3 initial days of PD and 2 follow-up days
  - Each school has a Lead Teacher ($1200/yr stipend)
- Phase II gets Kits & PD in last year of grant

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Funding the LASER i3 Model

- The USDOEd i3 grant ($25.5M + 20%)
  - The Kits, all PD costs, Lead Teacher
  - A regional Management Support Specialist (Janette Archuleta)
  - Regional Awareness & Planning meetings
  - All research costs
  - $1000/per year for control schools
- What LANLF will provide
  - Initial contacts with districts
  - $1.5M in matching funds
  - Kit management (refurbishment, delivery)
  - Office space for Management Support Specialist

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What Is in It for the Region and Participating Districts?

- 400+ teachers (200 phase 1) provided 90 hours of PD in teaching inquiry science and literacy strategies (approximately $8M)
- Curriculum and materials (Kits) provided by the grant (approximately $2M for the region)
- With ISEC reaches over 50% of region
- Establishes regional PD capacity
- Participation in a transcendent national study

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Phase I Districts

- Bernalillo
- Chama
- Jemez Valley
- Los Alamos
- Mora
- Pecos
- Peñasco
- Rio Rancho
- Santa Fe

Phase 2 Districts

- Bernalillo
- Chama
- Española
- Los Alamos
- Pecos
- Rio Rancho
- Santa Fe
- West Las Vegas

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LASER-i3 Progress to date

- Professional Development - 290 teachers/administrators
- 182 Science kits provided to NM schools
- 8,000 Student Notebooks provided
- Research has begun in grades 3 and 6
- Awareness Building Conference scheduled for April 2012
- Strategic Planning Institute scheduled for June 2012