# New Mexico Computer Science for All

## Overview

**About:** Year-long comprehensive PD program for teachers via an online computer science class which teaches computer science concepts via modeling and simulation of real world problems, workshops and practicum.

<table>
<thead>
<tr>
<th>Institution</th>
<th>Santa Fe Institute</th>
<th>Data for:</th>
<th>2013-2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI/Leader:</td>
<td>Irene Lee</td>
<td>Age of Program:</td>
<td>6 months</td>
</tr>
<tr>
<td>Location:</td>
<td>New Mexico</td>
<td>School Districts:</td>
<td>18 districts</td>
</tr>
</tbody>
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## Teachers Served

| Served:          | 31 (2013)          | Dosage:    | 230 hours/yr |
| Grade(s):        | 7-12               | Characteristics | Math, Science, Language Arts, Computer Science, Computer Applications |

## Program Budget

| Sources:         | NSF CE21 CS10K     | Budget:    | $998,337.00/3yrs. |
Learning Goals

• Big Idea I. Creativity: Computing is a creative activity.
• Big Idea II. Abstraction: Abstraction reduces information and detail to facilitate focus on relevant concepts.
• Big Idea III. Data: Data and information facilitate the creation of knowledge.
• Big Idea IV. Algorithms: Algorithms are used to develop and express solutions to computational problems.
• Big Idea V. Programming: Programming enables problem solving, human expression, and creation of knowledge.
• Big Idea VI. Internet: The Internet pervades modern computing.
• Big Idea VII. Impact: Computing has global impacts.
PD Structure

PD Components:
- Kickoff conference in January
- Online undergraduate/graduate level class
- Mini-workshops
- Summer Workshop
- Practicum experience

Support Structure:
- SFI Researchers
- UNM Faculty
- Regional Facilitators
- Online PD Network (Community of Practice)
Successes and Challenges

Successes

• Online class allows accessibility across NM
• Online community forum allows for communication between teachers

Challenges

• Wide range of participants’ background
• Required participation does not encourage true online discussion
• Privacy issues in sharing online contributions
• Potential for contamination between cohorts
Measures of Success

• Successful completion of online UNM class by teachers
• Buy-in from school administration to offer fall classes
• Sufficient high schools student interest to fill offered classes
• Completion of high school class by diverse population of students
Teacher Demographics

- By grade levels taught
  - 13% teach 7-12\textsuperscript{th};
  - 87% teach 9-12

- By subject taught
  - 42% teach Mathematics
  - 45% teach Science
  - 10% teach English/Language Arts
  - 29% teach Computer Apps / IT / Bus. Comp.
  - 10% teach Computer Science (AP CS A, Java, etc.)

- 58% female, 42% male
  - 16% Native American
  - 6% Asian
  - 3% African American
  - 23% Hispanic / Latino
  - 48% White

- Years of teaching spanned 1-20 years.
- 50% have experience with SCC and/or GUTS
Participating Schools (22)

- 18% Urban / 32% Suburban / 50% Rural
- 77% Public / 18% Charter / 5% BIE

- 50% small (<500 students) / 28% Med. (500-1500) / 23% Large (1501 – 3000)

- 82% are majority URM serving schools
- 50% are majority Hispanic/Latino
- 18% are 99-100% Native American serving