SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH (STEM)

- Description of STEM status in Oklahoma
- Description of OU STEM projects
- Increase connections with the K-12 system and produce K-12 teachers who excel in both content and practice to improve STEM learning
NA= not available

NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 4 science scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).
OKLAHOMA SCIENCE PROFICIENCY
GRADE 8

NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 8 science scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).
*significantly different (p< .05) from 2009 when only one jurisdiction or the nation is being examined; NA= not available

NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 4 mathematics scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).
OKLAHOMA MATH PROFICIENCY
GRADE 8

*significantly different (p< .05) from the 2009 score for the jurisdiction; NA= not available

NOTES: National average for United States is reported value in National Assessment of Educational Progress (NAEP) reports. NAEP grade 4 mathematics scores for public schools only.

SOURCE: National Center for Education Statistics, NAEP (various years).
OKLAHOMA HIGH SCHOOL STUDENTS
ACT COLLEGE READINESS (%) 2012

<table>
<thead>
<tr>
<th>Subject</th>
<th>Oklahoma</th>
<th>National</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science</td>
<td>26</td>
<td>31</td>
</tr>
<tr>
<td>Math</td>
<td>37</td>
<td>46</td>
</tr>
</tbody>
</table>
GRADING

GRADE F

- Content and Rigor Score 1/7
- Clarity and Specificity 1/3
- Total Score 2/10

With rampant mistakes, critical omissions, and below-grade-level expectations, it seems that the content in the Oklahoma science standards could not have been written—or vetted—by anyone with a working knowledge of the natural world.

Given the almost complete uselessness of the Sooner State science standards, Oklahoma barely manages an average score of one out of three for clarity and specificity.
CURRICULAR FOCUS AND COHERENCE:
COMMON CORE STATE STANDARDS TO
TIMSS AND NAEP SCORES
EDUCATIONAL RESEARCHER (2012) 41:294-308

High-achieving TIMSS countries (2009)

CCSS-M

Similarity in focus and coherence

State NAEP Scores (8th grade math)
CURRICULAR FOCUS AND COHERENCE: COMMON CORE STATE STANDARDS TO TIMSS AND NAEP SCORES

EDUCATIONAL RESEARCHER (2012) 41:294-308

THE POINT:

- The closer state math standards are to the Common Core standards, the higher the NAEP and TIMSS performance.
RELATIONSHIP BETWEEN COMMON CORE STATE STANDARDS AND NAEP SCORES

THE POINT:

- The closer state math standards are to the Common Core standards, the higher the NAEP performance, however,
- the level of performance is different among states.
- Oklahoma is a member of a cluster of 13 states with lower performance.
OKLAHOMA STEM STANDARDS

OK ADOPTED IN 2010

- Common Core State Standards in Mathematics and Literacy
- Being implemented
- Facing possible repeal

NEXT GENERATION SCIENCE STANDARDS [NGSS]

- OK developed their own informed by NGSS
- Under review by governor
# K20 STEM

Impacts Oklahoma

<table>
<thead>
<tr>
<th>Program</th>
<th>Teachers &amp; Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEM-Ready Schools</td>
<td>422 Teachers / 8,283 Students</td>
</tr>
<tr>
<td>K20alt</td>
<td>Teachers &amp; Students</td>
</tr>
<tr>
<td>University Researcher Outreach</td>
<td>Teachers &amp; Students</td>
</tr>
<tr>
<td>Oklahoma Educational Technology Trust [OETT]</td>
<td>5,320 Teachers / 76,893 Students</td>
</tr>
<tr>
<td>Digital Game-Based Learning [DGBL]</td>
<td>5,500 Students</td>
</tr>
</tbody>
</table>
Elementary Schools

2013-2014 Model Schools

Keota ES
Mangum, Edison ES
Mustang ES, Mustang
Peggs ES
Rose Union ES, Deer Creek
Silo ES
Springer ES
Wellston ES

2013-2014 Awarded

Bishop ES
Charles Evans ES, Ardmore
Chouteau-Mazie ES
Elmore City Parnell ES
Howe ES
Muldrow ES
Mustang Trails ES
Liberty ES, Sapulpa
Rocky Mountain ES
Watts ES
Woodland Hills ES, Lawton

22 Principals
422 Teachers
8,283 Students
OU RESEARCH SCIENTIST OUTREACH

Lessons Online

Authentic Research Experiences for Teachers

- CyberCommons: Purple Martin 2012
- EPSCoR: 2014-2017
DGBL [DIGITAL GAME BASED LEARNING]

2008:
- McLarin’s Adventure
  - 8th & 9th grade
  - Interdisciplinary
  - English, Mathematics, & Science

2010:
- Mind Your Own Budget
  - 9th grade students
  - College & Career Awareness
  - Financial Literacy

2012:
- Me&E (Me and Energy)
  - 10th graders
  - Algebraic Skills
  - Energy Career Awareness

2013:
COMMUNITY IMPACT IN OKLAHOMA