REACH3

STEM: Science, Technology, Engineering and Mathematics

Jeff Downs, Executive Director of STEM

STEM:

Science, Technology, Engineering, and Mathematics

"Preparing OK students for the technical innovative future"

REACH3

REGIONAL EDUCATORS ADVANCING COLLEGE CAREER AND CITIZEN READINESS HIGHER

STEM: What is it?

- STEM education enhances the manner in which math and science instruction is taught to students in Oklahoma.
- STEM breaks down the departmentalizing walls of all core subject teaching
- STEM incorporates full student engagement, problem solving, discovery, and exploratory learning.

STEM: What is it?

- STEM replaces the traditional teacher-centered classroom with an ideal learning environment that engages students throughout the entire learning process.

- STEM uses innovative technology as a tool to help create dynamic project based learning environments

- STEM education begins at the elementary level and continues through HS level

National view of STEM TODAY!

- Results of report from Georgetown University Center of Education and the Workforce-Oct, 2011
  - 100 students with a Bachelor's degree 19 graduated with a STEM degree and only 8 were working in STEM occupations ten years after graduation.
  - STEM talent is getting lost to non-STEM occupations
  - Demand for STEM talent far exceeds that of the supply of STEM qualified people to fill those jobs

Alarming Stats of STEM in OK!

- 2008-09 5 Rankings of Top Majors and Subject Areas
  - Samples taken from 22 of 25 colleges or universities in OK

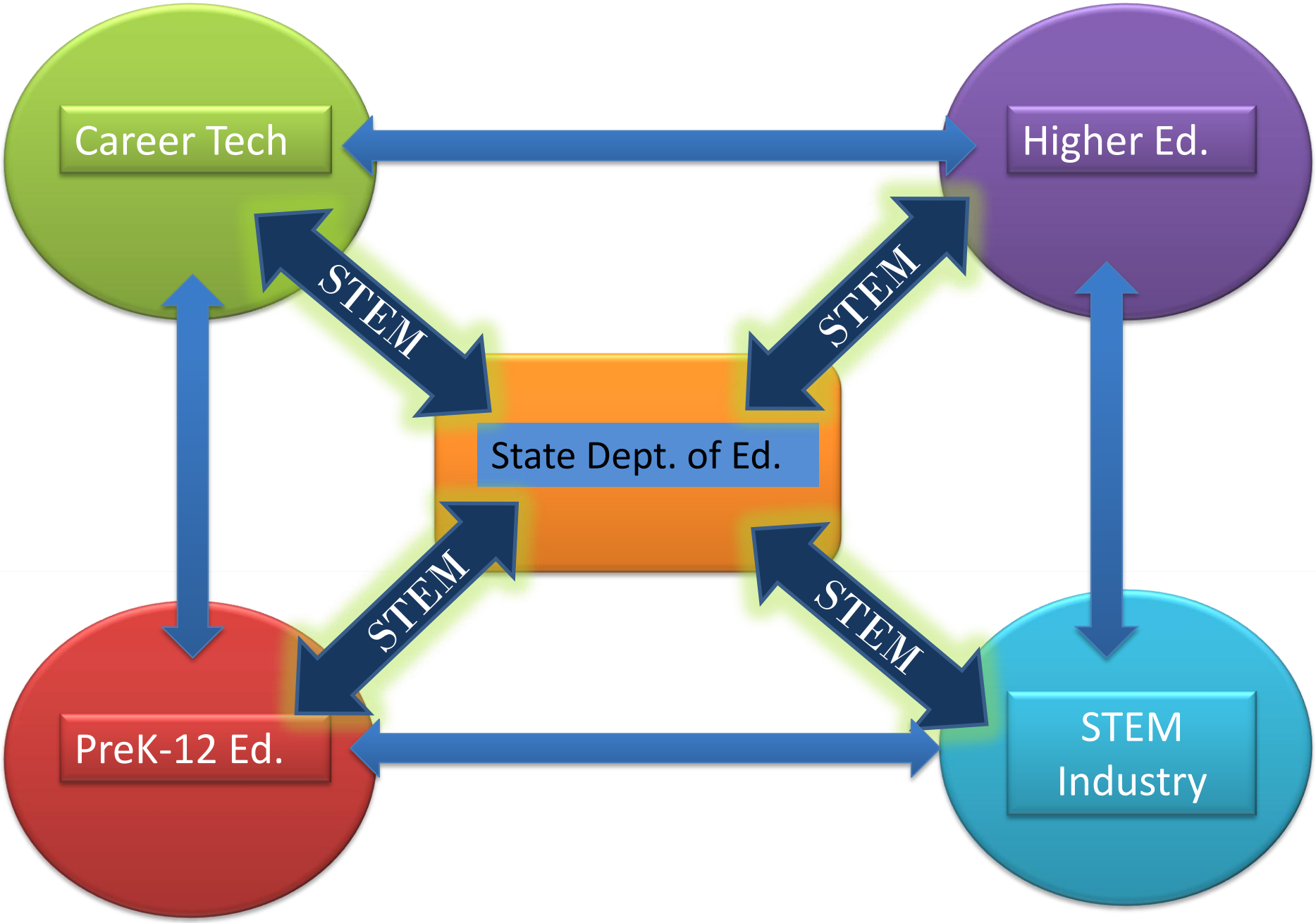
1. Business/Business Administration/Business Management
2. Pre Nursing/Nursing/Nursing Science
3. Education (all categories)
4. General Studies
5. Sociology/Psychology

- Engineering ranks 7th and engineering technology ranks 10th as chosen majors in OK

Mission Statement

- **Revolutionize!**
- **Revitalize!**
- **Reform!**
- **Reshape!**

...*the way that OK students are being introduced and taught science and math today by embracing STEM education as the mainstream teaching strategy.*


Career Tech
Higher Ed.
STEM
STEM
State Dept. of Ed.
STEM
STEM
PreK-12 Ed.
STEM
Industry

Immediate Action Items

1. **<u>Improve the current science and math ACT test scores</u>**

   - ACT composite test score is 20.7
   - Composite score has been static since 2007
   - Full 10 percentage points below the national average in mathematics
   - Full 5 percentage points below national average in science

"How can we make the biggest impact of change today?"

Immediate Action Items

2. **<u>Decrease amount of students needing remediation in science and math prior to entering higher ed.</u>**
    - ACT's analysis of 2011 ACT-tested high school graduates interested in health care:
        - 16% met the college readiness benchmark for math
        - 11% met the benchmark for science.
        - 37% met benchmarks for reading.

"What can be done at K-12 levels to increase skill levels needed to increase student readiness?"

Immediate Action Items

3. Focus on establishing long lasting partnerships between education and industry focusing on all aspects of STEM education in OK

   - OK Dept. of Commerce projects 6,260 STEM job openings in OK for the next 10 years
   - OK State Regents for Higher Ed indicate that over the past 3 years OK has only graduated 4,171 STEM field grads.
   - 10 yrs = 62,600 jobs v OK STEM grads (10yrs) =13,903.33

Long Term Goals

- Create regional STEM Consortiums
  - Key players/major stake holders needed:
    - SDE, local educators, school administrators, business leaders

- Sole purpose is to promote STEM education in the area
  - Meet/discuss/act upon furthering STEM education initiatives in the region
  - Focus on progress being made and note where the pockets of excellence are taking place

Long Term Goals

- Create the OK STEM Coalition
  - Key players/major stake holders needed:
    - SDE, State government officials, all levels of educators/administrators, key STEM Industry personnel
- Sole purpose is to promote STEM education in the State of Oklahoma
    - Meet/discuss/act upon furthering STEM education initiatives in the State
    - Complete partnership of all entities that further the STEM initiative

QUESTIONS and DISCUSSION

What STEM activities are happening in your district?

How could your REAC3H Network collaborate to expand STEM opportunities for students?

Contact Information

Jeff Downs

Executive Director of STEM

State Department of Education

405-521-2107

jeff.downs@sde.ok.gov

REACH 3