

CPE STEM Task Force

Cross Sector Group 1

New Ideas

January 31, 2007

Q – Competitive?

- Teachers
- Students

Teachers

- Not competent?
- Risk adverse
- How incent?
 - Career ladder
- Teacher/school performance not connected
- Non \$\$ rewards → student success

Q – Sustainable?

Energy

- Acetxline (?) based econ – chem.
- Needs tech /labor market
- Work → has chemical ind ethanol/biodiesal plants
 - Strains food supply
- Market research – other types
 - Methane → landfills

Sustainability

Eg – no primary alum for military use (soon)

- Recycle/reuse technology
 - Cars/man
 - Tires → energy
- Into curriculum
- Green technology for government /school buildings
 - PLTW – Energy audits/evaluation
- Related projects at the elementary level
- Hands-on → building/making – all through pipeline
- Science labs in every school

- Fewer labs in schools
 - Need \$\$ for implementation
 - Have training
 - Not just computers
 - Needed for inquiry-based instruction
- GE modules → Louisville
 - Hous continue? (could be adopted _____)
 - Used to replace textbook
- Availability of teachers
- Science /math teams
- PLTW – too many shop teachers → Need science and math
- Small districts pool kits/modules
- Think tank → Kentucky – tech transfer
- High School science fairs on energy
- Grant opportunities for labs/science resources
- Are the resources near by?
- PSE Faculty mentor K-12 teachers re: funding /grants
- KDE websit soon
- Kentucky science support network – K-12, PSE
 - “Ask an expert”
 - Teachers and students
- Teachers/faculty need more time to engage in support, especially curriculum and instruction reviews (months)
 - More helpful than summer instruction
 - GA board of regents → model
- STEM task force needs concrete goals, strategy, time line
 - For sustainability → after task force – entity
 - Measures

Sustainability

Labs for all students and schools

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Cross Sector Group 2

New Ideas

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Big Issue and Ideas

- Science literacy is important but there is an anti-science bias at work here – conservative, parochial attitudes in Kentucky
- Form interdisciplinary pods assigned to teachers/schools on annual basis (higher education, K-12, business, government) for STEM support

- Nation's energy needs – the unifying theme everyone can rally around. Energy might also bridge Louisville with rest of the state. A lot of interdisciplinary opportunities with energy as well. Would give students relevance and urgency. A concrete application
- Must emphasize importance of STEM. All sectors must be on same wave length. This is for all kids, everyone has a role.
- Regarding energy. Does it help to have 1 idea or is this too limiting? Just one of 10 examples. Students need to see STEM is everywhere, but energy is a nice example.
- MATH AND SCIENCE SKILLS HAVE VALUE.
- People think it's not for everyone. But it is and that's a fundamental change.

- It will take an outside force to make higher education and K-12 education change. It will take government and business.
- STEM is gaining national currency as a phrase. Don't necessarily shy away from acronym
- Students are not being introduced to careers and real world of work. Perhaps there isn't enough time? Lexmark discussing possibility of putting scientists in classrooms as substitutes. Also exposing teachers to co-op experiences with science/ technology/ industry. Exchange programs

- Put incentives on table (money) to get teachers to participate in these enrichment opportunities.
- We are losing many students in middle school. There are too many teachers teaching out-of-field.

- We aren't challenging enough kids enough of the time. Counselors are advising students to drop difficult courses.
- Science and technology are ever-evolving. There must be incentives to keep current.
- Change instruction – No more “sage on the stage” Recognize different learning styles.
- Maybe CPE's new funding model could reward institutions more for STEM degrees.
- Math and science skills have value, and YOU CAN DO IT.
- Public policy changes at a glacial pace. A challenge to overcome.

- Is there a way to tie differential pay to experiential learning, modes of instruction that do take more time and preparation? It would be difficult to implement.
- No better economic development tool than to say to perspective companies, we have the best math/science teachers in the world.
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Cross Sector Group 3

New Ideas

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How do we get kids excited?

- Student ambassador program/study abroad
- WKU Academy of Math & Science
- Understand student needs/focus groups
- New technology/ new methods/ not the same old math & science/ computer video will be new medium of instruction/ educators need to lead transition (business opportunity) to new modes of instruction
- Many school districts don't have infrastructure
- Career technical education can't keep pace with change in industry/ rely on vendors to produce curriculum
- Kids not taking accelerated courses voluntarily/ implemented robotics course with PEP funds kids responded favorably/ relevance is key

- 2nd life video same
- Thomas Freeman "The Flat Earth"
- 1958 → New math/ New science/ We need similar change/ we need integration of subject areas vs. stand alone subjects/ eliminate silos

- Choice of teacher/ students not limited to teacher with low PRAXIS scores/distance learning will address
- Curriculum design/ re-design/ relevant practical
- Text books (defacto curriculum) / choice of textbooks vital
- State curriculum not the answer/ teacher more important than curriculum

- Retooling teachers in major concern
- Can't neglect the arts/ important factor in economic development
- Thinking and problem solving/ not evident in schools to sufficient degree/ should be integrated across the curriculum
- Holistic paradigm shift needed
- Integration part of KERA has faded away/ reliability and validity more important than creativity and problem solving

- Encourage STEM throughout pipeline/ “bank account” concept incentives/ accountability/ assessment at each stage/ linked to performance
- Remove financial barriers/ Ireland model
- Ruby Payne research/ immediate vs. future rewards/ low socio-economic students may respond to different set of incentives

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Cross Sector Group 4

New Ideas

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Parents and Students

- Something in it for STEM study
- Fear as a motivator
- Break down silos
- No Teacher Left Behind
- Ensure graduates get jobs
- Teachers/Students think like scientists
- Risk Takers
- Energy → Urgency
- Energy Independence
- Environmental Stewardship
- Capture technology as motivator
- Instill desire to know – curiosity
- Teacher as a creative force
- Teach to test is counter productive
- Path of least resistance