

Be more than “just” a Science Teacher!

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Be more than “just” a Science Teacher!

Agenda:

- Do you know what your students are thinking and saying?
- Historic alignment across the country
 - College Readiness
 - Career Readiness
 - 21st Century Skills
- Systemic implications of STAAR
- Consider: changing your perspectives on who you are and what you do.

Get to know your students from various perspectives

- What are students saying???
- Do you know?
- If you are not asking them and discussing with them, then you are guessing.

Gallup National Student Poll

- 70,078 students in grades 5–12 took part
- 335 schools in 59 districts across 18 states
- Focus was on hope, engagement and well-being

Gallup National Student Poll

- ***Hope***

- The ideas and energy we have for the future; *hope* drives effort, academic achievement, credits earned, and retention of students
- *Hope* items correlate positively with academic achievement and success after high school better than GPA or scores on ACT/SAT

Gallup National Student Poll

- ***Engagement***

- The involvement in and enthusiasm for school; *engagement* reflects how well students are known and how often they get to do what they do best.
- Student engagement declines from grades 5 through 12
- Levels of engagement correlated to high and low performing schools

Gallup National Student Poll

- ***Well-being***

- How we think about and experience our lives; *well-being* tells us how students are doing today and predicts their success in the future

Gallup National Student Poll Findings

Hope

- 50% of students polled are hopeful
 - 33% are stuck
 - 17% are discouraged
- Note that 95% believe they will graduate from high school

Gallup National Student Poll Findings

Engagement

- 50% of students polled are engaged
- 30% are not engaged
- 20% are actively disengaged

Gallup National Student Poll Findings

Well-being

- 63% of students polled are thriving
- 36% are struggling
- 1% are suffering

Gallup National Student Poll Findings

- Only 25% met the criteria of being *hopeful, engaged, and thriving*

Gallup National Student Poll Findings

- For the 50% who are **hopeful**,
 - 67% are engaged
 - 24% are not engaged
 - 9% are actively disengaged
- For the 33% who are **stuck**
 - 40% are engaged
 - 38% are not engaged
 - 22% are actively disengaged

Gallup National Student Poll Findings

- For the 17% who are ***discouraged***
 - 24% are engaged
 - 29% are not engaged
 - 47% are actively disengaged

Gallup National Student Poll Findings

- For the 63% who are ***thriving***,
 - 58% are engaged
 - 28% are not engaged
 - 19% are actively disengaged
- For the 36% who are ***struggling***
 - 37% are engaged
 - 33% are not engaged
 - 30% are actively disengaged

National Gallup Student Poll Findings

- For the 1% who are ***struggling***
 - 17% are engaged
 - 18% are not engaged
 - 65% are actively disengaged

National Gallup Student Poll

- What are the implications of these trends?
- Consider participating

www.gallupstudentpoll.com

Lets look at some data that
applies to about a third of Texas
students and teachers

Conducted by the
International Center for Leadership in
Education in 2008

Teacher and student perspectives: comparison

T—Students can apply what I am teaching to their everyday lives.	92%
S—I can apply what I learn to my everyday life.	58%

Teacher and student perspectives: comparison

T—Students in my classroom engage in hands-on activities.	88%
S—We do lots of hands-on activities in my classes.	45%

Teacher and student perspectives: comparison

T—I encourage students to explore career pathways.	80%
S—My teachers encourage me to explore different careers.	49%

Teacher and student perspectives: comparison

T—I make learning exciting for my students.	84%
S—My teachers make learning exciting.	40%

Teacher and student perspectives: comparison

T—I encourage students to use multiple resources when solving problems.	93%
S—My teachers encourage me to use many resources to solve problems.	65%

Teacher and student perspectives: comparison

T—I am aware of my students' interests outside of school.	87%
S—My teachers know my interests outside of school.	30%

Teacher and student perspectives: comparison

T—I recognize students when they demonstrate positive behavior in school.	95%
S—Good citizenship is rewarded in this school.	40%

Teacher and student perspectives: comparison

T—I know my students’ academic interests and goals.	84%
S—My teachers know my academic interests and goals.	35%

Teacher and student perspectives: comparison

T—I know what my students are passionate about.	78%
S—My teachers know what I love to do outside of school.	28%

How can you get to know your students better?

Have students conduct a study, analyze it, and then participate in brief discussions—that you facilitate—on the results. (A 21st century skill)

The 21st Century Skills Movement

Focus on 21st Century Skills

- Closer linkages and alignment of skills and knowledge acquisition in K–12 with what is needed for the workforce.
- Why such a focus with high unemployment — there more people than jobs????

Focus on 21st Century Skills

“Student Engagement: Focus on the Student!” by *Leslie Wilson*. Quotes the “2009 High School Survey of Student Engagement, Charting the Path from Engagement to Achievement,” which says that

- Most high school students are bored and disconnected from school. These results have been consistent since 2006. Students from 103 high schools in 27 states participated in the survey.
- Other interesting findings:
 - Less than half of students, **41%**, said they went to school because of what they learned;
 - **23%** reported that they went to school because they like their teachers;
 - **65%** said they “like discussions in which there are no clear answers”;
 - **82%** reported that they would welcome the chance to be creative in school.

Focus on 21st Century Skills

- ***In this high school survey, students clearly reported a desire to engage in dialogues where there are no clear answers and a desire for opportunities to engage their inventiveness in school.***
- Both these desires reflect the learners' wishes for schools to call on their deeper thinking in collaborative settings and for the learners to get to tap their imaginative, innovative abilities.

21st Century Skills Focus

[http://www.guide2digitalllearning.com/
blog_leslie_wilson/
student_engagement_focus_student](http://www.guide2digitalllearning.com/blog_leslie_wilson/student_engagement_focus_student)

Focus on 21st Century Skills

The Partnership for 21st-Century Skills

- The Partnership for 21st-Century Skills has emerged as the leading advocacy organization focused on infusing 21st-century skills into education. The organization brings together the business community, education leaders, and policymakers to define a powerful vision for 21st-century education to ensure every child's success as citizens and workers in the 21st century.
- The Partnership encourages schools, districts and states to advocate for the infusion of 21st-century skills into education and provides tools and resources to help facilitate and drive change.
- The website is <http://www.p21.org>.

STEM Focus

From the 2010 Survey of science and STEM leaders conducted by IESD, Inc., in collaboration with STEM market expert Daylene Long:

1. Professional development was a funding priority for most STEM leaders and was perceived currently to be insufficient.
2. A majority of respondents projected an increase in technology-delivered STEM PD and a decrease in face-to-face STEM PD.
3. STEM leaders wanted technology tools that would support hands-on science.
4. Most STEM leaders thought that simulation software should be used in conjunction with hands-on activities rather than instead of such activities.

STEM Focus

From the 2010 Survey of science and STEM leaders conducted by IESD, Inc., in collaboration with STEM market expert Daylene Long:

5.A majority of STEM educators thought it was somewhat or very unlikely that eBook readers would be widely adopted in the next five years.

The full report may be found here:

[www.sellingtoschools.com/products/
education-market-researchstem-education](http://www.sellingtoschools.com/products/education-market-researchstem-education)

College Readiness Standards

- A STAAR (State of Texas Assessments of Academic Readiness) focus area
 - College-readiness cutoff scores will be noted for Math and ELA and the will be vertically aligned
 - Achievement levels aligned to national/international levels
 - Need cross curriculum collaboration

Do you know about the results of the EOCs that

Science College Readiness Standards

I. Nature of Science: Scientific Ways of Learning and Thinking

A. Cognitive skills in science

- Skepticism, logic, and professional ethics, creativity and insight
- Formulate appropriate questions/hypotheses
- Rely on reproducible observations

B. Scientific Inquiry

C. Collaborative and safe working practices

D. Current scientific technology

E. Effective communication of scientific information

Science College Readiness Standards

II. Foundation Skills: Scientific Applications of Mathematics

A. Basic mathematics conventions

1. Understand the real number system, ratios, proportions, percentages, decimal fractions, and translate from any form to any other.
2. Use proportional reasoning to solve problems.
3. Simplify algebraic expressions.
4. Estimate results to evaluate whether a calculated result is reasonable.
5. Use calculators, spreadsheets, computers, etc., in data analysis.

Science College Readiness Standards

II. Foundation Skills: Scientific Applications of Mathematics

B. Mathematics as a symbolic language

1. Carry out formal operations using standard algebraic symbols and formulae.
2. Represent natural events, processes, and relationships with algebraic expressions and algorithms.

C. Understand relationships among geometry, algebra, and trigonometry

1. Understand simple vectors, vector notations, and vector diagrams, and carry out simple calculations involving vectors.

Science College Readiness Standards

II. Foundation Skills: Scientific Applications of Mathematics

D. Scientific Problem Solving

E. Scientific applications of probability and Statistics

F. Scientific measurement

- **SI units, logarithmic notation, significant digits.**

Science College Readiness Standards

III. Foundation Skills: Scientific Applications of Communication

- A. Scientific writing**
- B. Scientific Reading**
- C. Presentation of scientific/technical information**
- D. Research skills/information literacy**

Science College Readiness Standards

IV. Science, Technology, and Society

A. Interactions between innovations and Science

B. Social ethics

C. History of science

College Readiness Standards

- What are the themes and areas that must be added to our curriculum to strengthen our students' college and career readiness?
- Do the majority of teachers have the capacity to meet these new standards.

Career Awareness

Career Awareness

- The 16 Career Clusters:
<http://www.careerclusters.org/16clusters.cfm>
- What jobs are growing and which are shrinking?
- Implications for the future
 - Personal Financial Planning Model (Texas Scholars Program www.tbec.org)

Career Awareness

- Get there Texas movement
- TBEC has website
www.gettheretexas.com
- For students, parents and teachers.

Consider changing your
perspectives on who you are
and what you do?

Consider changing your perspectives on who you are and what you do?

- Change the approach of your instructional programs from teaching your students science ***to teaching them to be scientists, mathematicians, writers, researchers, etc.***
- What does this mean ?
- This will take an aggressive form of Leadership

Change your perspectives on who you are and what you do?

- What do the college Readiness Standards focus on?
 - ***Reasoning, critical thinking, communicating, research, and applying science to everyday life.***
- Ensure these things systemically into your instructional programs-how by examining student work/activities
- *Have students research careers multiple times in a year with reports—*
- *Have students develop problems for their peers*

Consider changing your perspectives on who you are and what you do?

- This approach supports what students are looking for in school—dialogue and discussion on issues where answers are not clear.
- *This approach supports the STEM areas and 21st century skills*
- *And it can close the gap between student perceptions and teacher perceptions!*

Be more than “just” a School Administrator

- We need some movers and shakers out there working together to begin to make changes now, rather than putting it off for someone else to do later.
- ***Become a professional educator who will provide students the means and opportunities to become scientists and help them to get ready for their real world.***

Be more than “just” a School Administrator- become the visionary Leader that is needed

- ***Are you ready to change your role and***
- ***If not, you are in for a difficult transition.***

- ***The culture of your school(s) will need to be strengthened, or you will be fighting and clawing your way through this new environment.***

You Should Be More Than A Math Teacher Information sheet

- Copies of the power point www.danacenter.org
- The Partnership for 21st Century Skills <http://www.p21.org/index.php>
- Gallup Student Poll <http://www.gallupstudentpoll.com/home.aspx>
- TBEC Get There Texas <https://gettheretexas.com/?c=gettingStarted>
- Common Core Standards <http://www.corestandards.org/>
- Understanding by Design <http://www.grantwiggins.org/ubd/ubd.lasso>
- IBM Education Toolkit <http://www.reinventingeducation.org/RE3Web/>
- Edutopia (George Lucas Foundation) <http://www.edutopia.org/>
- Career Pathways <http://www.careerpathway.org/home.htm>
(Focus on Middle School)
- Mind Tools (Leadership Development)
http://www.mindtools.com/pages/article/newTMC_5W.htm
- Student Perceptions
<http://www.gifted.uconn.edu/siegle/SchoolPerceptions/printversion.pdf>

It is an exciting future
we have to work in,
attack it with gusto!

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