Roscoe Collegiate HS: A Tried and True Model for Rural ECHS

Jacob Tiemann, Director of ECHS/STEM
Roscoe Collegiate ISD
jtiemann@roscoe.esc14.net
Roscoe Collegiate ISD
Why Change Now?

“The world is becoming increasingly complex.”
(Shinn, Texas A&M University, 2004)

“Things that do not change, tend to stay the same.”
(Shinn, Texas A&M University, 2014)
Changing Face of Roscoe

Economically Disadvantaged
Demographic Trend:

• 30% in 1990
• 70% in 2010
• **90% by 2015 (projected)**

Addressing the poverty issue became Priority # 1
Understanding Poverty

“Impoverished students come to school lacking many of the same cognitive structures that most non-poverty students possess.”

(Wagner, Harvard GSE, 2009)

“Results from extensive research support the premise that by age 4 children from affluent families have heard over 400 million more vocabulary words than children from impoverished homes.”

(Raymond Paredes, Commissioner of Higher Education, 2010)
The Rural Dilemma

“There are 834,000 rural K-12 students in Texas, which is almost 10% of the total K-12 enrollment.”

“Approximately 43% of the rural K-12 student population is considered low income.”

“Only 20% of the 2012 high school graduating class in Texas will end up earning any kind of postsecondary credential.”

(The Bush School of Government & Public Service, Texas A&M University, 2014)
Regional Education Data
Abilene Regional P-16 Council

College-going rate

- Decreased from 54% to 49% from 2005 to 2011
- 30% of those did not return sophomore year of college
- By 2020 in Texas, 59% of jobs will require postsecondary training

US Workforce Projections
Required Education Level by 2020

- 46% H.S. Dropout
- 24% H.S. Grad
- 18% Some College, including certificates
- 12% Associates Degree or higher
The Real Texas Dropout Rate

“Fewer than 1% of high school graduates, who lay out of college one year after graduation from high school, complete a four-year degree within six years.”

(Institute for Demographic and Socioeconomic Research, 2009)
42.37% of Texans have a HS diploma or less

34.49% of Texan adults hold a postsecondary degree
23.14% of Texan adults have some college, no degree

For a strong economy, the skills gap must be closed.

**TEXAS:**
- 60% By 2020, jobs requiring a career certificate or college degree
- 31% Texas adults who currently have an associate degree or higher
- 29% Skills gap

**Nationwide:**
- BA Degree or Higher: 35%
- HS Diploma or Less: 35%
- Some College/AA Degree: 30%

Economics of Education

EFFECTS ON TEXAS ECONOMY IF CURRENT TRENDS CONTINUE

• 12% decline in average household income
• 15% increase in number of households living in poverty
• $15 billion per year less in state tax revenue
• An increase of 100,000 in the prison population
• An additional $1.5 billion in incarceration costs

(Institute for Demographic and Socioeconomic Research, 2009)
Economics of Education

EDUCATION = REVENUE SOURCE (NOT EXPENSE)

- **133,200** dropouts in Texas
- **$34.6 billion** lost wages and productivity in one class
- **$1.6 billion** in medical care
- **$691 million per year savings** from a 5% reduction in male dropout rate (Alliance for Excellent Education, 2009, www.all4ed.org)
- Economic impact of quality teaching is much greater than previously thought – more than **$700,000** per child in lifetime earnings (The New York Times, January 6, 2012)
Solutions

✓ Early College
✓ AVID
✓ Common Instructional Framework
✓ Instructional Coaches, Common Planning, Teacher Observations
✓ Instructional Rounds
✓ The Third 90
✓ Project-Based Learning (T-STEM)
A Blended Model

EARLY COLLEGE HIGH SCHOOL

“Early College High School is a bold approach, based on the principle that academic rigor, combined with the opportunity to save time and money, is a powerful motivator for students to work hard and meet serious intellectual challenges. Early college high schools blend high school and college in a rigorous yet supportive program, compressing the time it takes to complete a high school diploma and a college degree.”

(Early College High School Initiative, 2006)
Roscoe Collegiate Enrollment

Dual Credit Comparison

<table>
<thead>
<tr>
<th></th>
<th>Fall 2013</th>
<th>Spring 2014</th>
<th>Fall 2014</th>
<th>Spring 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual Students</td>
<td>102</td>
<td>100</td>
<td>111</td>
<td>105</td>
</tr>
<tr>
<td>Dual Courses</td>
<td>279</td>
<td>237</td>
<td>306</td>
<td>235</td>
</tr>
<tr>
<td>Dual Hours</td>
<td>866</td>
<td>773</td>
<td>970</td>
<td>757</td>
</tr>
<tr>
<td>Total Students Enrolled</td>
<td>111</td>
<td>112</td>
<td>115</td>
<td>112</td>
</tr>
</tbody>
</table>
Early College Impact

- Early College students are significantly more likely to graduate from high school than comparison students.
- Early College students are significantly more likely to enroll in college than comparison students.
- Early College students are significantly more likely to earn a college degree than comparison students.

(American Institute for Research, 2013)
Educational Relevance

COMMON INSTRUCTIONAL FRAMEWORK

A ‘Best Practice’ Common Instructional Framework promotes **six instructional strategies** that prepare ALL students for 21st Century colleges, careers, and workforce readiness.

(Texas High School Project, 2007)
High Cognition Facilitation

THE COMMON INSTRUCTIONAL FRAMEWORK (CIF)

1. Collaborative group work
2. Writing to learn
3. Questioning
4. Scaffolding
5. Classroom talk
6. Literacy groups

(UPCS Institute, 2003)
What are Students Doing?

THE HARVARD INSTRUCTIONAL ROUNDS METHOD

Designed to assess the degree of implementation of the CIF horizontally across the curriculum and vertically throughout the grade levels (what students are actually doing in class).

“The Rounds process is an explicit Practice that is designed to bring discussions of instruction directly into the process of school improvement. By Practice, we mean something quite specific. We mean a set of protocols and processes for observing, analyzing, discussing, and understanding instruction that can be used to improve student learning at scale. The Practice works because it creates a common discipline and focus among practitioners with a common purpose and set of problems.”

(City et al., Harvard GSE, 2009)
Going the Extra Mile

A College Readiness Program that places a premium on Writing, Inquiry, Collaboration, and Reading (WICR) to develop responsible college students, a critical component of Early College Success!

Advancement

Via

Individual

Determination

AVID
Rigor Without Relevance

“Rigor without relevance is not sustainable.”

(Daggett, 2008)
P-20 Anyone?

“A high school diploma is no longer a reliable ticket to a decent living. In an era of computers and instant access to information, problem solving, teamwork, and communication skills are essential for personal and national success.”

(City, Elmore, Fiarman, and Leitel, Harvard GSE)
What is STEM?

S = Science
T = Technology
E = Engineering
M = Mathematics
Why STEM Education?

“Texas is in a crisis today. We don’t have the skilled workforce to fill even half the STEM related jobs that exist today. Texas won’t continue to be the great state that we are, if we fail to address this issue right now.”

(Dan Branch, Texas House of Representatives, November, 2012)
STEM OPPORTUNITIES IN TEXAS

STEM SKILLS ARE IN DEMAND
In Texas, STEM skills have stayed in demand even through the economic downturn.

STEM: 2.5 jobs for every 1 unemployed person

Non-STEM: 3.3 unemployed people for every 1 job

Agricultural Workforce Data

AmericasFarmers.com

- Agriculture employs 23 million people, 17% of US workforce

- 54,400 annual openings for people with baccalaureate or higher degrees in food, renewable energy, and environmental between 2010 and 2015
RCHS/WTC STEM Pathways

Track 1: Biomedical Science

- **Clinical**: pre-professional animal & human health
- **One Health**: animal & human global health, food safety, disease control
- **Laboratory**: animal, human & plant biotechnology research
- **Business**: animal & human health care administration

Track 2: Engineering

- **Research & Design**: computer engineering & product design
- **Application**: mechanical engineering
- **Business**: marketing and sales
Support Structures: STEM Models

<table>
<thead>
<tr>
<th>State Model</th>
<th>National Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Temple BioScience Institute, Temple, TX</td>
<td>• Blue Valley Schools Center for Advanced Professional Studies, Overland Park, KS</td>
</tr>
<tr>
<td>• Located on Scott and White Hospital’s West Campus</td>
<td>• Students paired with mentors to learn problem solving, time and project management, business ethics, and self-discipline</td>
</tr>
<tr>
<td>• Focus on science, biotechnology, research, and medical fields</td>
<td>• Focus on bioscience, business, engineering, and human services</td>
</tr>
<tr>
<td>• Students engaged in real-world, project-based curriculum</td>
<td>• Profession-based learning approach</td>
</tr>
</tbody>
</table>
Support Structures: Partnerships

Western Texas College
Angelo State University
Texas A&M University
Texas Tech University
INOVA
Monsanto
Texas A&M Agrilife Extension
Texas A&M Agrilife Research
Roscoe City Government
Collegiate Chiropractic & Wellness Center
Texas Tech T-STEM Center
Educate Texas
Apprentice Opportunities

- A challenge for rural settings - providing lab based, real world apprenticeship experiences!

- The Veterinary Science Certificate Program is an endorsement program (500+ hour apprenticeship) that is already in place in high schools across Texas and the United States, which has the potential to satisfy career path preparation for agriculture, business, education, health care, research, and technology.

- The Engineering Certificate Program is an endorsement program (500+ hour apprenticeship) that is currently under development that will have the potential to satisfy career path preparation for agriculture, architecture, business, construction, education, engineering, research, and technology.
Multiple Measures of Accountability

College and Workforce Ready Students

90% of students will:
• Earn an Associate Degree
• Earn STEM Endorsement (Biomedical or Engineering)

All students will:
• Conduct collaborative research and develop a capstone poster using the research process
• Develop an evidence-based portfolio with research conclusions and a rubric of measurable gains
Multiple Measures of Accountability
Education a Priority

“Learning is not compulsory...neither is survival.”

– W. Edwards Deming

“Without vision, the people perish.”

- Solomon
The Early Results

If you can dream it... You can become it!
Jacob Tiemann  
Director of ECHS/STEM  
Roscoe Collegiate ISD  
P.O. Box 579  
Roscoe, Texas 79545  
(325) 766-3629 (office)  
jtiemann@roscoe.esc14.net

Edward Morales  
Principal  
Roscoe Collegiate ISD  
PO Box 10  
Roscoe, Texas 79545  
(325) 766-3327  
emorales@roscoe.esc14.net
Links

Alliance for Excellent Education www.all4ed.org
Blue Valley Schools Center for Advanced Professional Studies www.bvcaps.org
Educate Texas http://www.edtx.org/
Global Achievement Gap www.gse.harvard.edu/clg
Harvard Graduate School of Education http://www.gse.harvard.edu/
International Center for Leadership in Education www.leadered.com
Jobs For the Future www.jff.org
Reinventing Education www.schoolchange.org
The Leadership & Learning Center www.leadandlearn.com
Texas Bioscience Institute www.texasbioscienceinstitute.com
Tony Wagner, Global Achievement www.tasanet.org
University Park Campus School www.upcsinstitute.org
Where America Stands http://www.youtube.com/watch?v=Sem6XrROkee