



## **P-16 Update: AVATAR and Mathematics**

***6<sup>th</sup> Annual Math College Readiness Symposium  
North Texas Regional P-16 Council  
March 22, 2014      Denton, Texas***

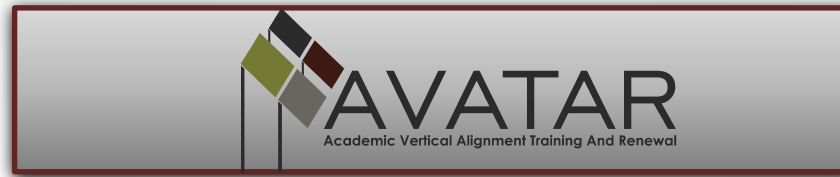
### **PRESENTERS:**

Mary Harris, *University of North Texas*

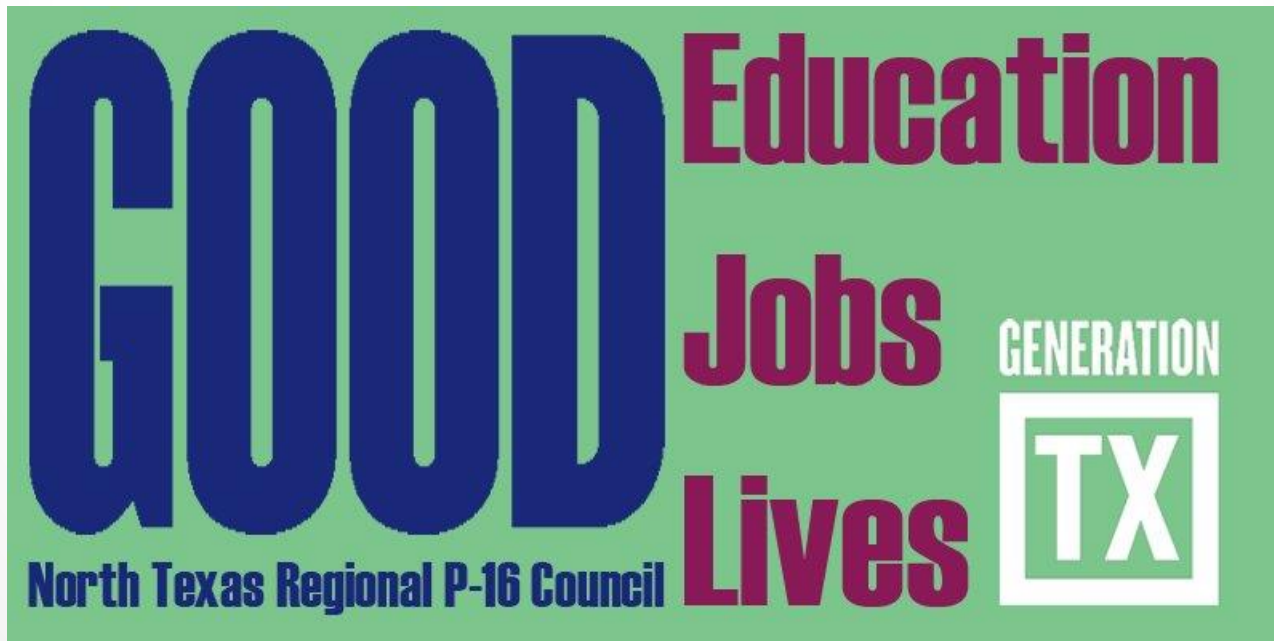
Jean Keller, *University of North Texas*

# Session Outcomes:

- **Gain awareness of vertical alignment** guided by the **Texas College and Career Readiness Standards** using a process called AVATAR to advance the success of students in learning mathematics.
- **Learn strategies** used by teams of mathematics educators and stakeholders in **assessing and improving the vertical alignment of courses and practices** that affect students' success in postsecondary education



**North Texas Regional P-16 Council  
works across the levels of education to  
advance the education of all students and  
close gaps in academic achievement.**





***What, Why  
and How?***

# *What Is* **AVATAR ?**

## Academic Vertical Alignment Training and Renewal

AVATAR is a statewide network of **regional partnerships**, focused on secondary and postsecondary **vertical course alignment**, to support students' **college and career readiness and success.**

AVATAR is a Texas Higher Education Coordinating Board (THECB) funded project that is implemented by the North Texas Regional P-16 Council and the University of North Texas.

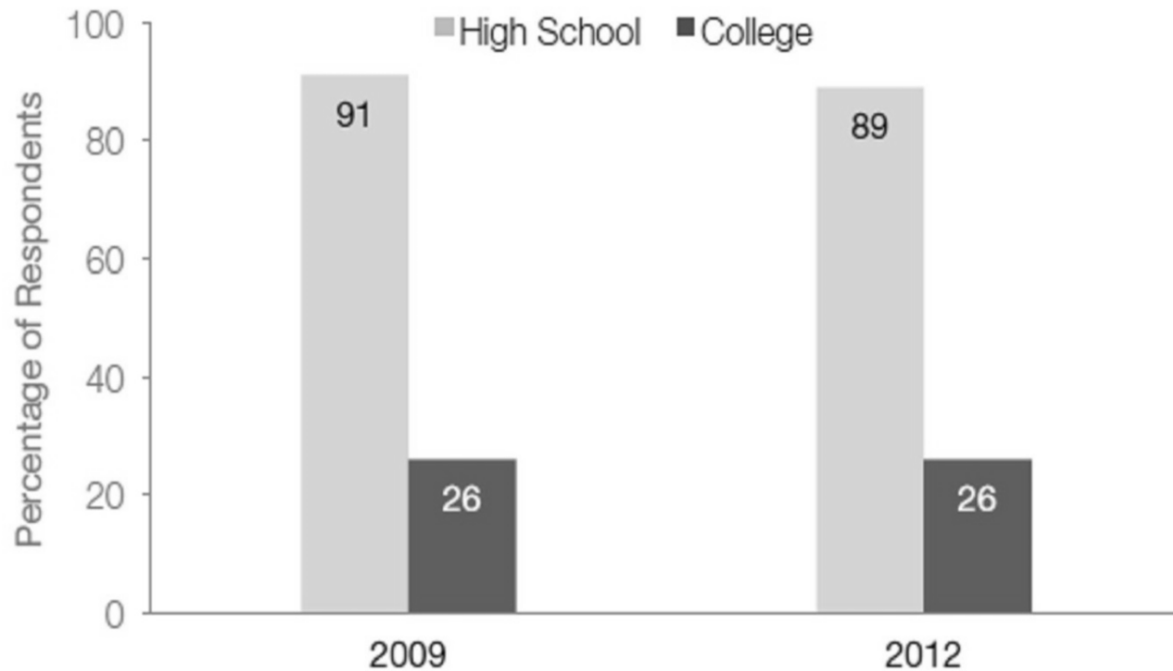
# *Why is* *Needed?*

- Too many secondary and postsecondary leaders and educators lack **shared and accurate information** and **understanding** of what a student must know and do to be successful in postsecondary education and careers;
- Too many students enter postsecondary education but do not **complete** in a timely fashion; and
- Too many students take **developmental education** at the postsecondary level.

# College Ready?

## The Preparation Gap

**Figure 2:** Percentages of Educators Reporting that Their Students Are “Well” or “Very Well” Prepared for College-Level Work in Their Content Area



**Note.** The data in this chart are from *ACT National Curriculum Survey 2009*, by ACT, 2009, Iowa City: Author, and *ACT National Curriculum Survey 2012*, by ACT, 2013, Iowa City: Author.

From: ACT National Curriculum Survey® 2012

# Graduation Rates

## 8<sup>th</sup> Grade Cohort

### 2001 - 2012

2001



**100**  
Of 8<sup>th</sup>  
Graders  
Enrolled...

Graduated  
from High  
School...

**69**



**52**

Enrolled in  
Higher  
Education...

Received a  
Higher  
Education  
Degree or  
Certificate.

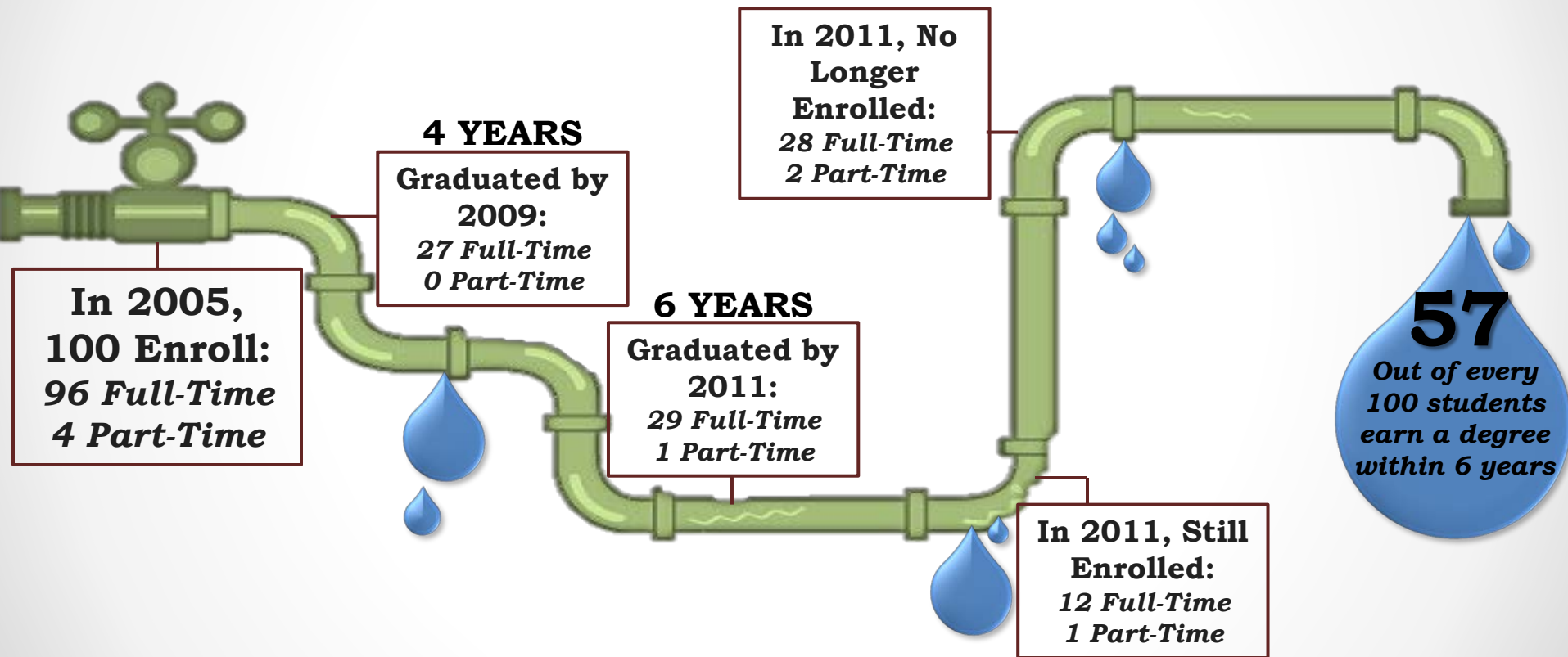
**19**



2012

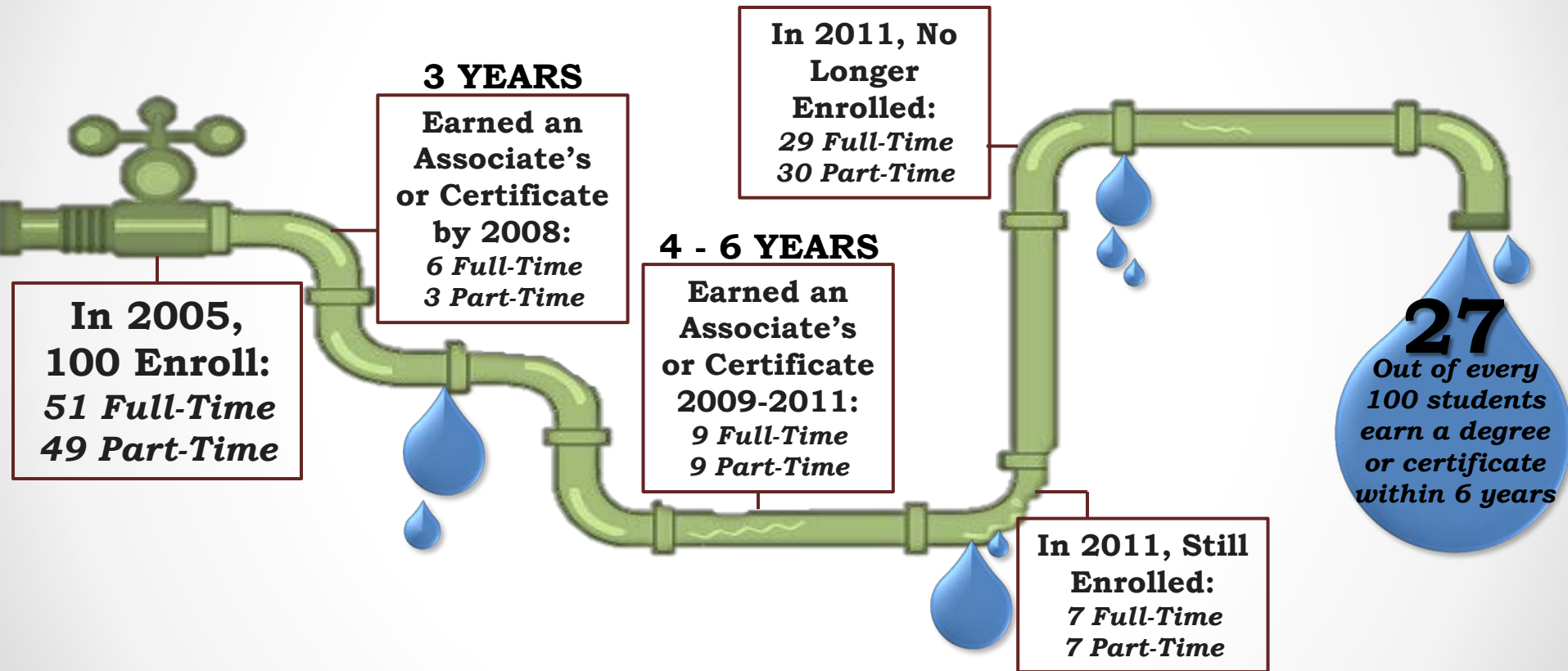


# Texas Public 4 Year University Pipeline: Fall 2005 Cohort



**PUBLIC UNIVERSITIES ENROLLMENT – 61,879**

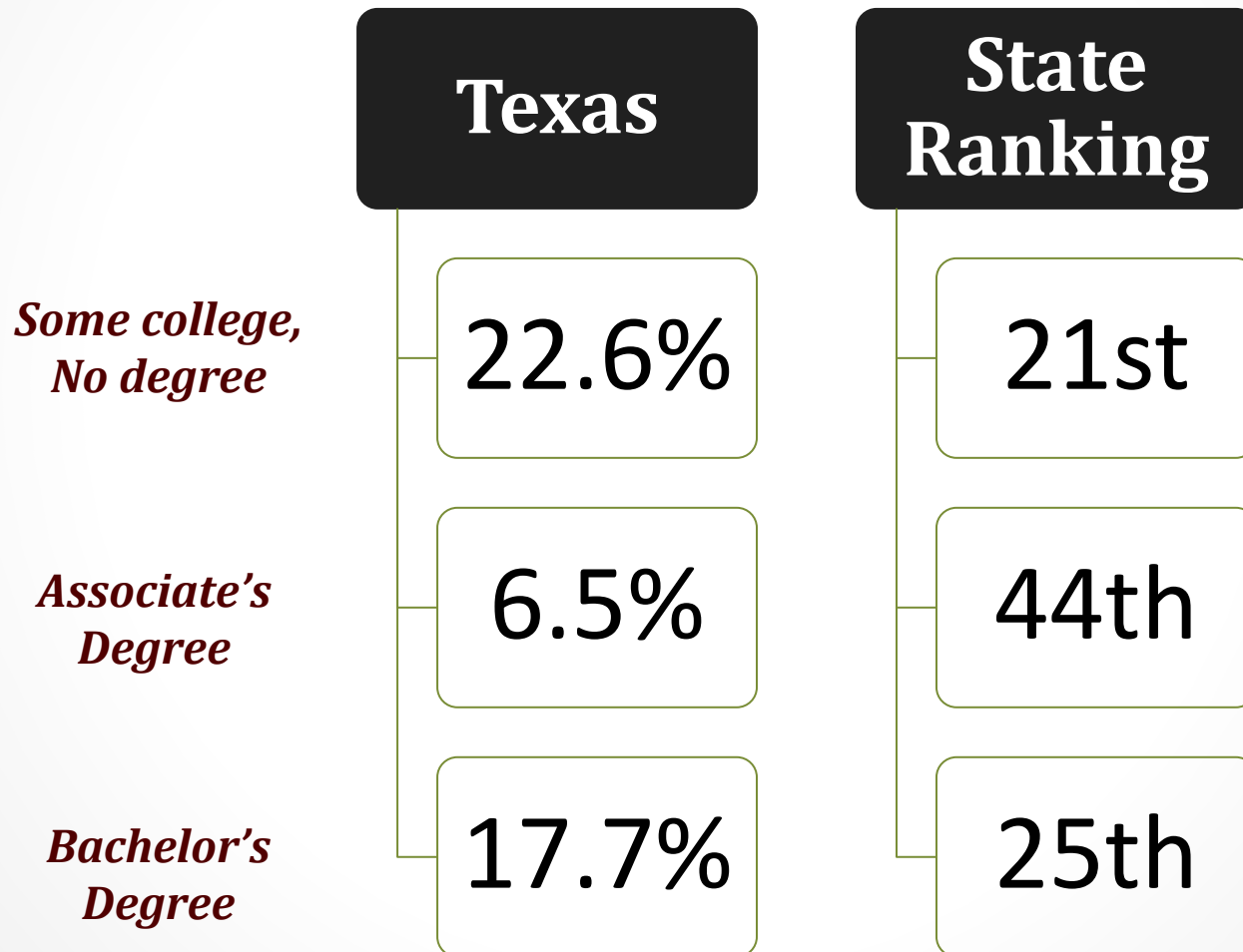
# Texas Public 2 Year College Pipeline: *Fall 2005 Cohort*



**PUBLIC COLLEGE ENROLLMENT – 106,660**

# Educational Attainment

*2013 Texas Public Higher Education Almanac*



# Students Needing Remediation

## TWO-YEAR COLLEGE

**51.0 %** Entering enrolled in remediation

<i>Ethnicity</i>	<i>Two-Year Colleges</i>
African-American	67%
Latino	59%
White	43%
Other	47%

<i>Age</i>	<i>Two-Year Colleges</i>
17-19	52%
20-24	51%
25+	48%

<i>Income</i>	<i>Two-Year Colleges</i>
Low Income	64%

## FOUR-YEAR COLLEGE

**22.5 %** Entering enrolled in remediation

<i>Ethnicity</i>	<i>Four-Year Colleges</i>
African-American	45%
Latino	34%
White	13%
Other	13%

<i>Age</i>	<i>Four-Year Colleges</i>
17-19	22%
20-24	39%
25+	49%

<i>Income</i>	<i>Four-Year Colleges</i>
Low Income	35%

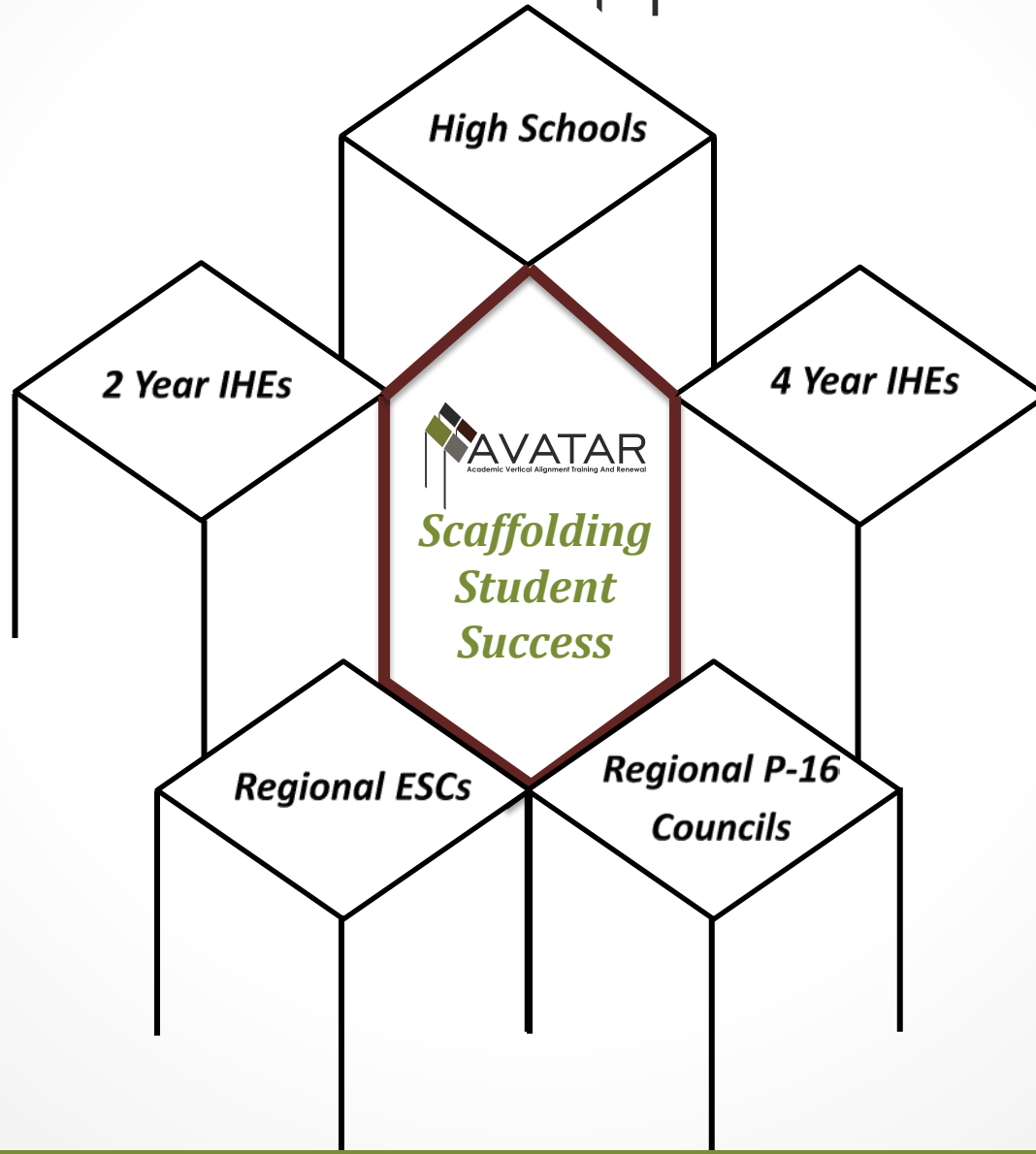
*How Does*



*Work?*



# Partnerships & Teams:



# *Regional Goals:*



**AVATAR**  
Academic Vertical Alignment Training And Renewal

1. Establish a **shared regional college and career readiness foundation and understandings.**
2. Use **regional data** to guide decision-making.
3. Design and implement a **course vertical alignment action plan** which includes critical conversations.
4. Evaluate **outcomes** related to **students' success** over time.

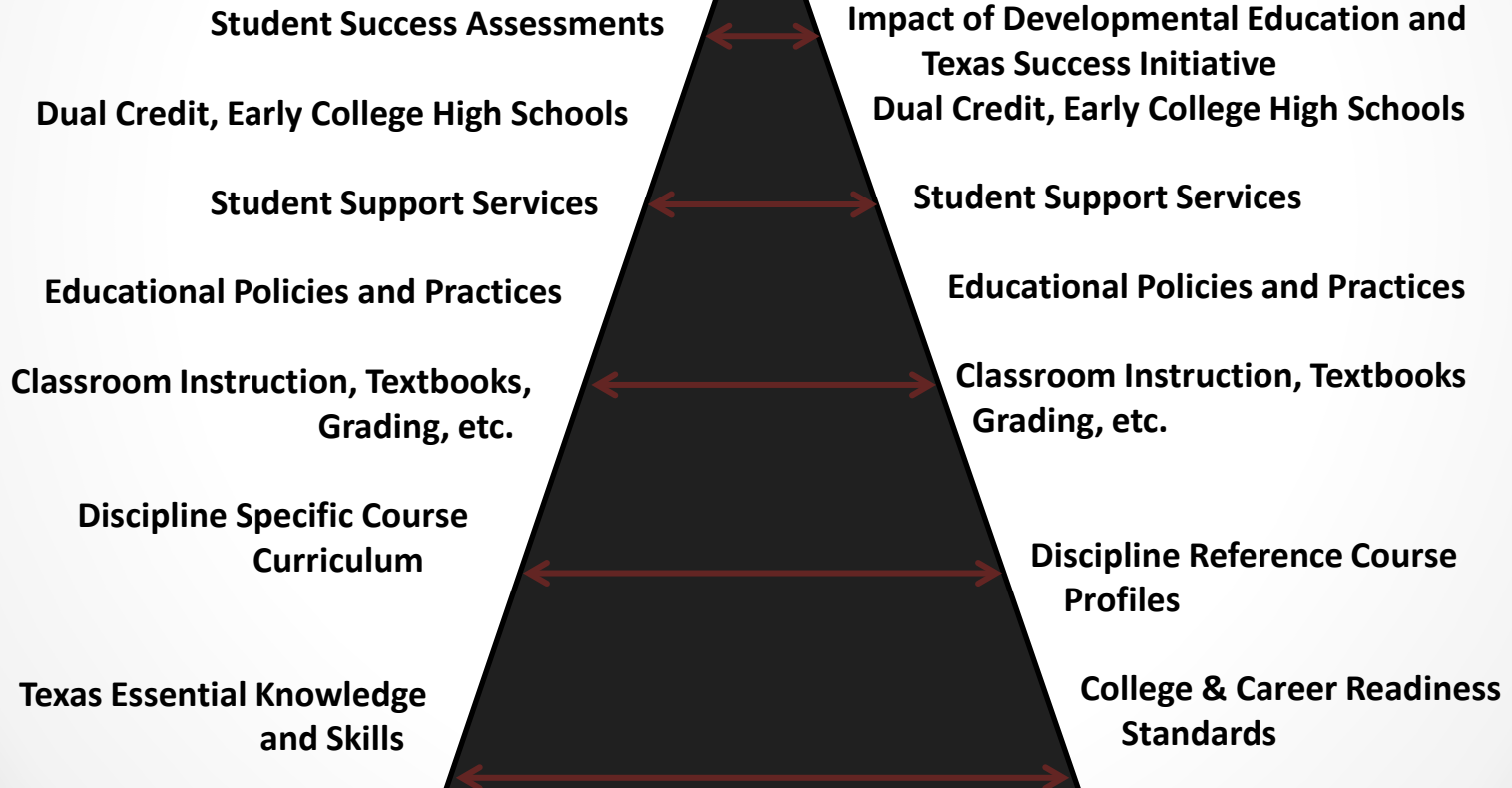
# Critical Conversations

**Secondary**

**Post-Secondary**

Graduate College/Career Ready

Graduate Career Ready





# Texas Academic Course Guide Manual (ACGM)

- *What is it?*
  - official list of Texas approved courses for general academic transfer
  - <http://www.thecb.state.tx.us/acgm>
- *How is it organized?*
  - alphabetic and with number by Texas Common Course Numbering System (TCCNS)
  - Title, common course prefix, course number, description, approval number, CIP area, maximum semester credit hours per student, maximum course contact hours, and **learning outcomes**

# ACGM: Example Entry

## MATH 1314 College Algebra (3 SCH version)

## MATH 1314 College Algebra (4 SCH version)

In-depth study and applications of polynomial, rational, radical, exponential and logarithmic functions, and systems of equations using matrices. Additional topics such as sequences, series, probability, and conics may be included

Approval Number .....	27.0101.54 19
CIP Area .....	Mathematics
maximum SCH per student .....	4
maximum SCH per course .....	4
maximum contact hours per course .....	64

### Learning Outcomes

Upon successful completion of this course, students will:

1. Demonstrate and apply knowledge of properties of functions, including domain and range, operations, compositions, and inverses.
2. Recognize and apply polynomial, rational, radical, exponential and logarithmic functions and solve related equations.
3. Apply graphing techniques.
4. Evaluate all roots of higher degree polynomial and rational functions.
5. Recognize, solve and apply systems of linear equations using matrices.

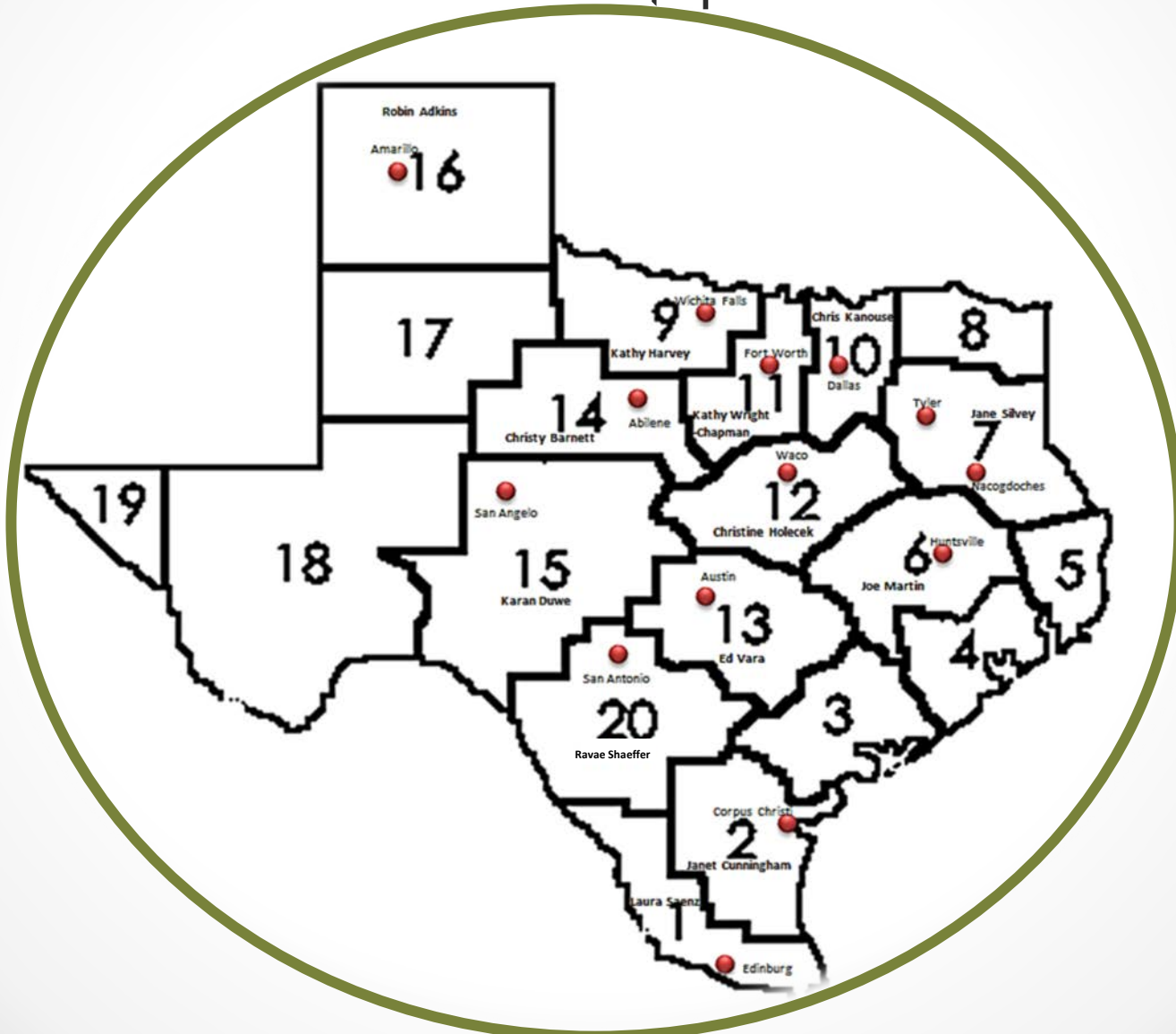
# AVATAR Course Profiles: What to Include?

- ACGM\* and Institution's Course Description
- Hours of Credit
- Prerequisites & Co-requisites
- Prior Knowledge & Expectations Related CCRS
- Student Learning Outcomes
- Course Policies, Expectations, & Practices
- Course Assignments & Assessments Descriptions
- Grading Practices (grading rubrics)
- Course Texts & Required Materials
- Methods of Instruction
- Class Schedule
- Student, Class, & Campus Learning Resources
- Sample Exams, Assignments, & Schedules
- Instructor Information



\*ACGM: Academic Course Guide Manual

# Partnerships & Teams:



# The Statewide Network



## **Mathematics**

- ESC 2, Citizens for Educational Excellence, TAMU-Corpus Christi, Del Mar College, & Calallen ISD.
- ESC 9, Midwestern State University, Vernon College, Burkburnett ISD, Wichita Falls ISD, Iowa Park CISD, and Vernon ISD.
- ESC 10, Dallas CCCD, Brookhaven College, & Dallas ISD.
- ESC 14, Abilene Regional P-16 Council, Cisco College, Ranger College, Western Texas College, Abilene Christian University, McMurry University, Roscoe Collegiate ECHS, Albany ISD, Anson ISD, Clyde-Green Springs ISD, Cooper ISD, Merkel ISD, Wylie ISD, & Roscoe ISD.
- ESC 16, Panhandle P-16 Council, West Texas A&M University, Amarillo College, Clarendon College, Frank Phillips College, Amarillo ISD, Borger ISD, & Canyon ISD.
- Region 20, P16 Plus Council of Greater Bexar County, UT-San Antonio, San Antonio College, Palo Alto College, & Harlandale ISD.

## **Science**

- ESC 1, Upper Rio Grande Valley P-16, UT-Pan Am, South Texas College, & Pharr San Juan Alamo ISD.
- ESC 10, UNT, Dallas CCCD, Brookhaven College, & Dallas ISD.
- ESC 11, UNT, TCCD, & Fort Worth ISD.

## **Awareness**

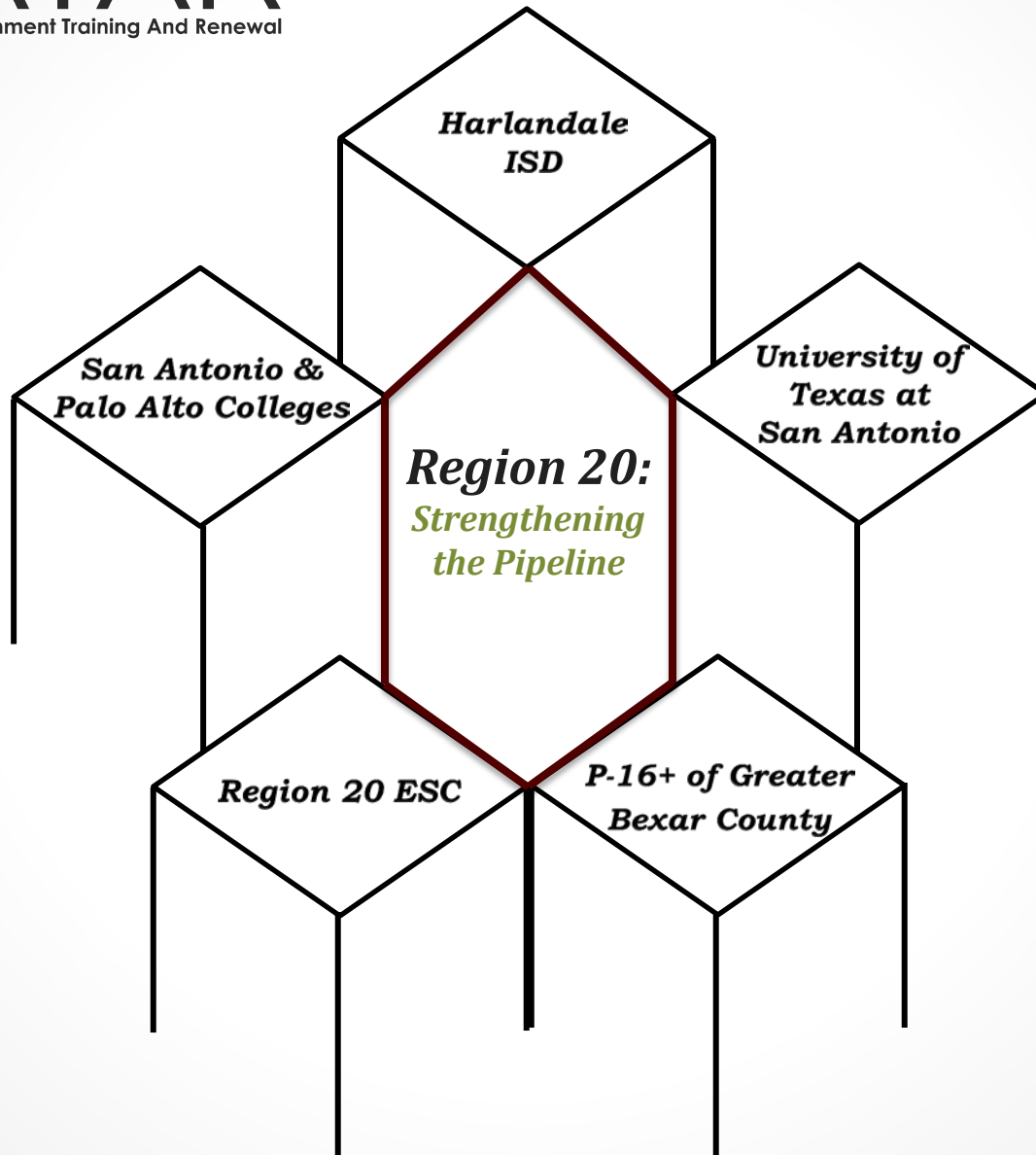
- ESC 7, Stephen F. Austin University, Kilgore College, & Kilgore ISD.

## **English Language Arts**

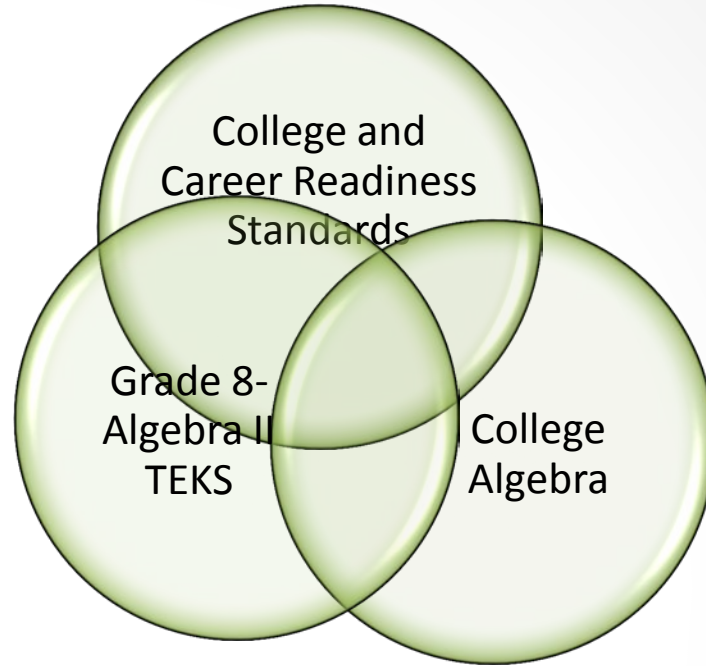
- ESC 6, Sam Houston State University, Lone Star College System, Buffalo ISD, Magnolia ISD & Huntsville ISD.
- ESC 9, Midwestern State University, Vernon College, Burkburnett ISD, Vernon ISD, Iowa Park CISD, & Wichita Falls ISD.
- ESC 11, Hill College, & Burleson ISD.
- ESC 12, McLennan Community College, Texas State Technical College, Waco ISD, La Vega ISD, Midway ISD, Robinson ISD, Reicher Catholic School, & Baylor University.
- ESC 13, Austin Community College, Austin ISD, & St. Edwards University.
- ESC 15, San Angelo P-16+ Partnership, Howard College, Angelo State University, Eden CISD, Wall ISD & San Angelo ISD.

# *Math Work*





# TEKS/CCRS Alignment



- Secondary alignment to TEKS was strong in comparing real numbers and weak in defining and giving examples of complex numbers.
- Post-secondary alignment to CCRS was strong in numeric reasoning and number operations.
- There is need for work with complex number and the number system in this pipeline.



# Critical Conversations

**Secondary**

**Post-Secondary**

Graduate College/Career Ready

Graduate Career Ready

Student Success Assessments

Impact of Developmental Education and Texas Success Initiative

Dual Credit, Early College High Schools

Dual Credit, Early College High Schools

Student Support Services

Student Support Services

Educational Policies and Practices

Educational Policies and Practices

Classroom Instruction, Textbooks, Grading, etc.

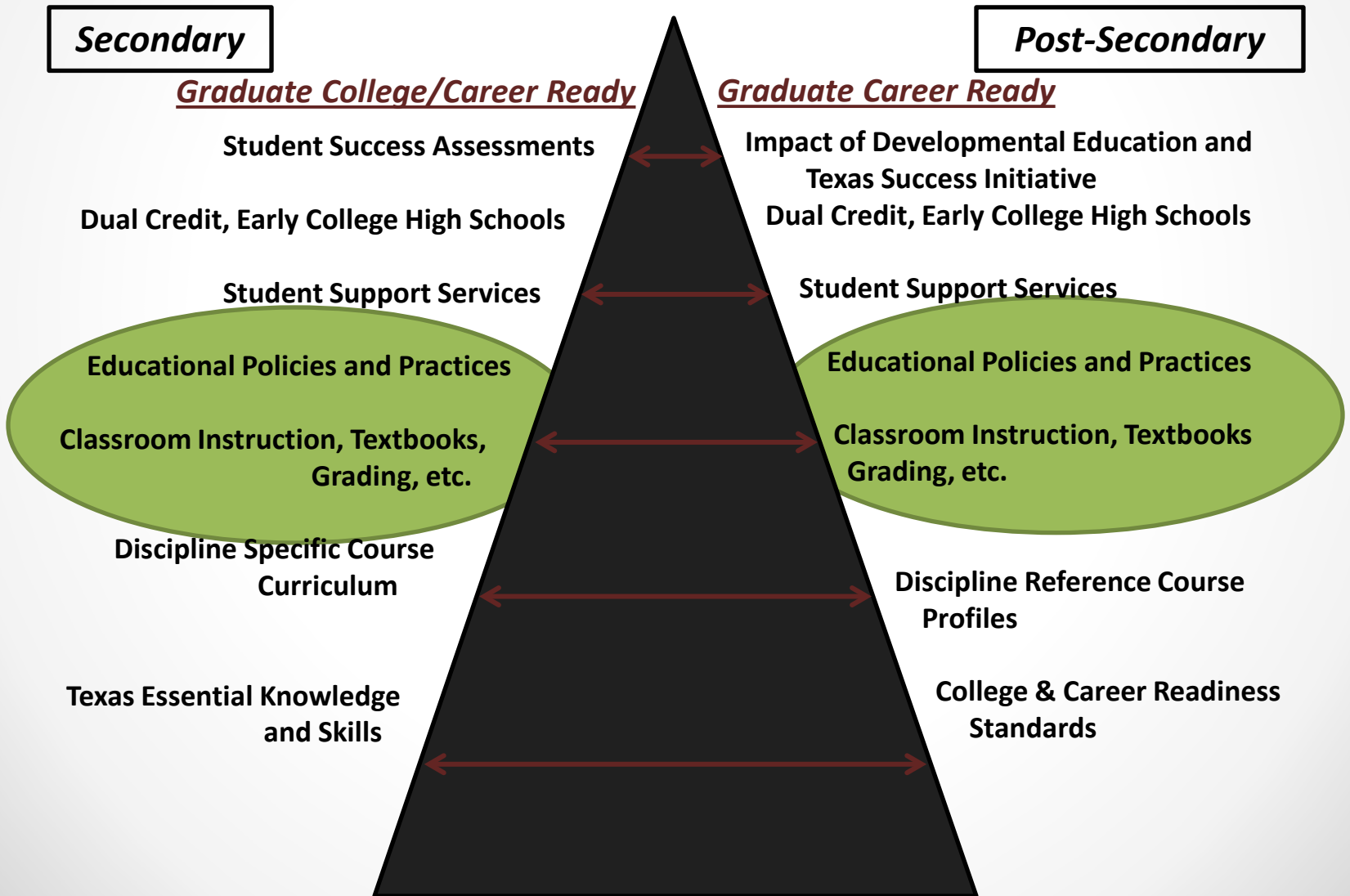
Classroom Instruction, Textbooks Grading, etc.

Discipline Specific Course Curriculum

Discipline Reference Course Profiles

Texas Essential Knowledge and Skills

College & Career Readiness Standards



## Focus Areas from Collaboration on 1/16/13

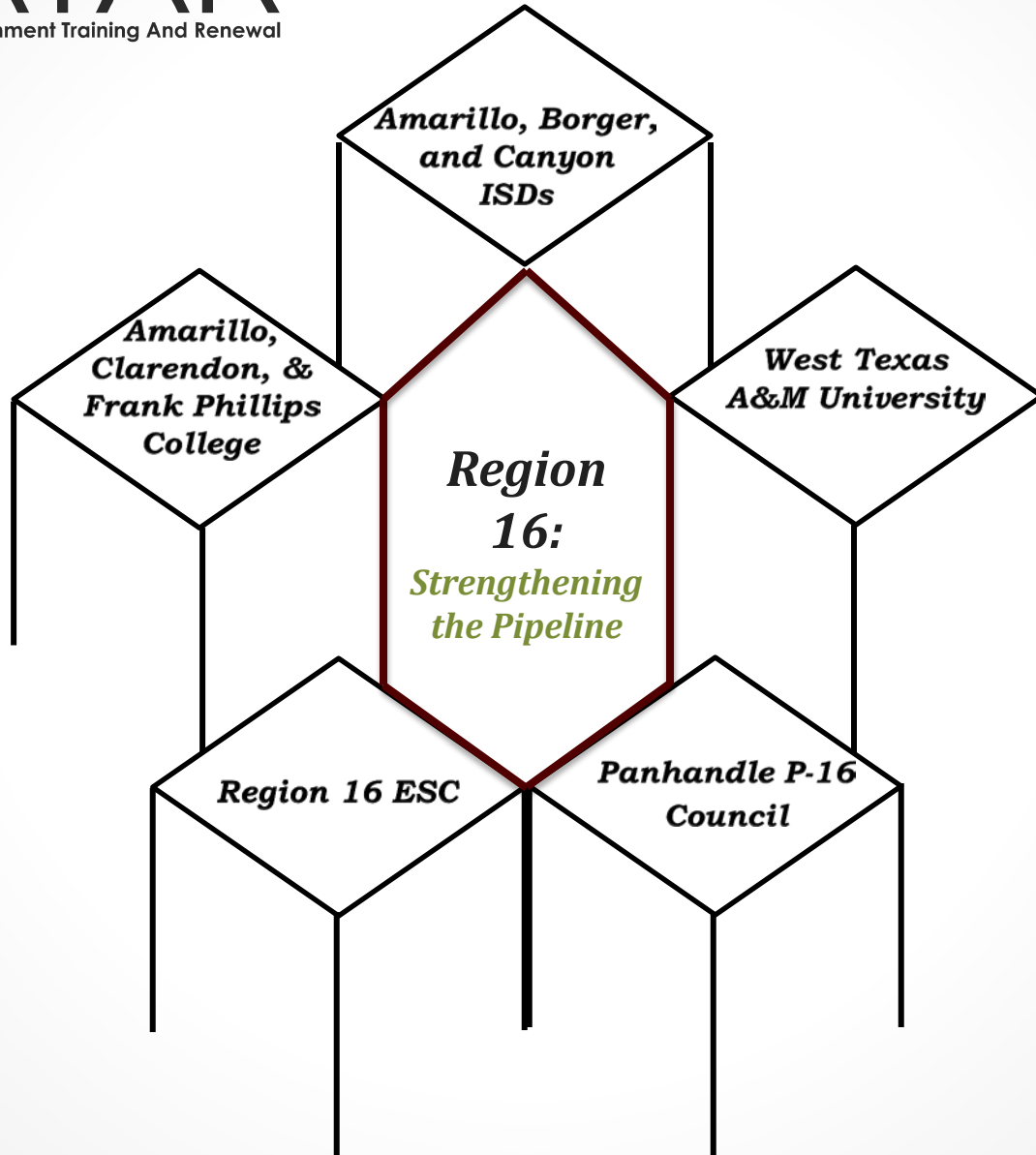
Short Term Planning	Long Term Planning
<ul style="list-style-type: none"> <li>• explain how 2 years of high school = 3 x week (1 semester college)</li> <li>• course review – 3 mos. of high school / 1 week UTSA</li> <li>• exposing college syllabus to students</li> <li>• What do you need to be successful?               <ul style="list-style-type: none"> <li>○ zap in middle school</li> <li>○ using a calendar</li> <li>○ Twitter, edmodo, Facebook</li> <li>○ administrative support for practices</li> </ul> </li> <li>• Class for “how to be a good student”               <ul style="list-style-type: none"> <li>○ notetaking methods</li> <li>○ organizational</li> <li>○ study skills</li> <li>○ practice is important</li> <li>○ test-taking skills</li> <li>○ meeting deadlines</li> <li>○ Buy In is a long term</li> </ul> </li> <li>• How can higher education communicate with administrators to express...?               <ul style="list-style-type: none"> <li>○ Panel discussion- advisory board with school board, administrators, superintendent, business, high school, ESC-20, directors, students, teachers, parents</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• My Foundations Lab – UTSA for Math, ELAR</li> <li>• Accuplacer Diagnostic – practice in and out of school</li> <li>• technology is available but funding is an issue</li> <li>• assessment HISD vs. UTSA – UTSA has 2-3 tests/sem</li> <li>• Grading:               <ul style="list-style-type: none"> <li>○ multiplication is a weakness (logic skills are weak – don’t remember)</li> <li>○ students quit before they are done</li> <li>○ addition, subtraction</li> </ul> </li> <li>• calculators – 12 weeks (CD) ( can do fractions better because of PreCal)</li> <li>• no calculator use in developmental math</li> <li>• expect kids to do math in their head</li> <li>• must develop basic arithmetic skills</li> <li>• HISD - TEKS               <ul style="list-style-type: none"> <li>○ no student buy in if no value – question the why? Why do we need this?</li> </ul> </li> <li>• pedagogy:               <ul style="list-style-type: none"> <li>○ direct teach</li> <li>○ application without knowledge</li> </ul> </li> </ul>

## Vertical Alignment Team

- Secondary Math teachers & district specialist
- Secondary English Language Arts & Reading teachers & specialist
- Postsecondary Math Professors – UTSA & ACCD
- P16+ of Bexar County
- UTSA P-20 Initiatives
- ESC-20 Coordinator

## Year 1 Critical Conversations = Year 2 Product Outcomes

- Interactive Notebook for Math Concepts
- College Readiness Survey
- College Readiness Outreach
- Literacy Support Guide for Math Teachers
- Professional Development Training for AVATAR in Region 20



# Participation Data from THECB

## Frank Phillips College, 2011

Developmental Education, Fall 2008 Cohort Tracked for 2 years

FTIC Students Not Needing Dev. Ed.	N	% Attempting College Courses	% Attempting and Completing
Frank Phillips College	297		
Math		76.5	61.4
Reading		95.7	70.9
Writing		79.1	57.1

FTIC Students Requiring Dev. Ed.	N	% Attempting College Courses	% Attempting and Completing
Math	72	23.6	58.8
Reading	62	48.4	66.7
Writing	12	50	66.7

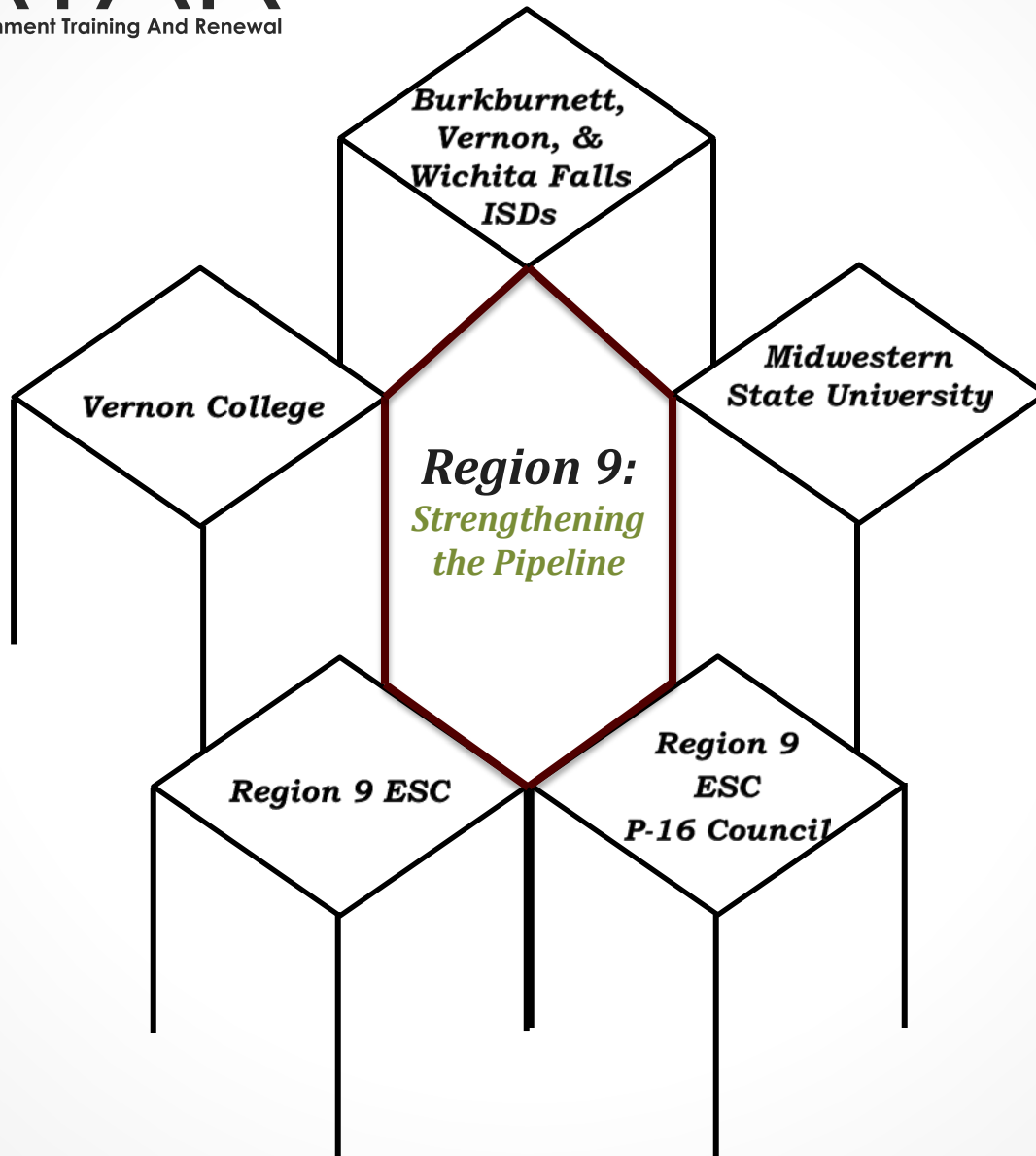
# Leading Up to Math Journals in Region 16

- Narrowed focus of high school mathematics team to Algebra II and Pre-Calculus
- Reviewed textbooks, syllabi, and exams of college algebra courses offered at the regional colleges and university
- Created list of topics from Algebra II that students need to know to be successful in College Algebra along with a list of soft skills needed.
- Slide provided by Gregg Lawler, West Texas A&M University

# Goals of Math Journal Format in Region 16

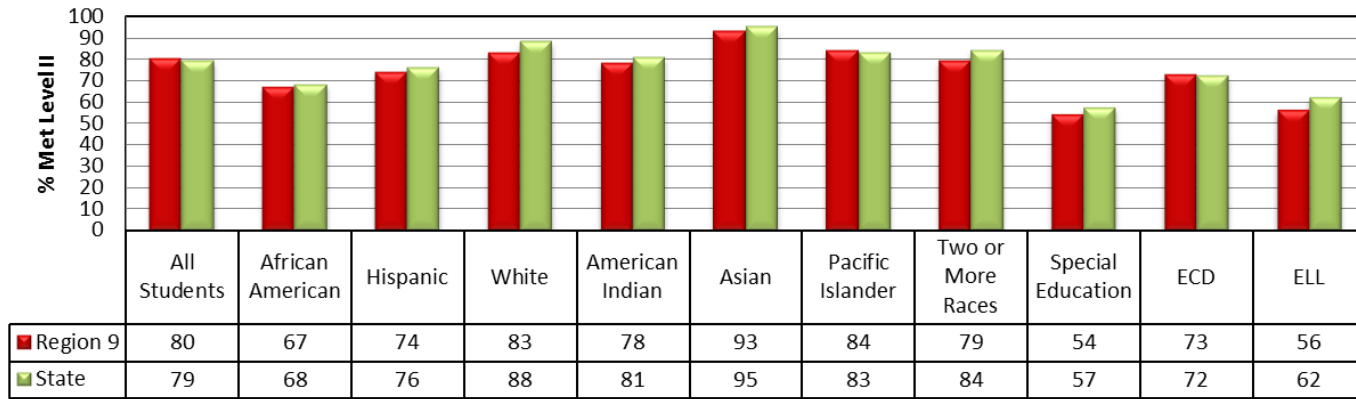
- Provide in-depth information about basic skills that are cross-referenced to college level exam problems in College Algebra
- Serve as a living document that is practical, durable and attractive enough for the student to keep and be willing to share
- Increase personal relevance by enable student to supplement notes taken in class.

Slide provided by Gregg Lawler, West Texas A&M University

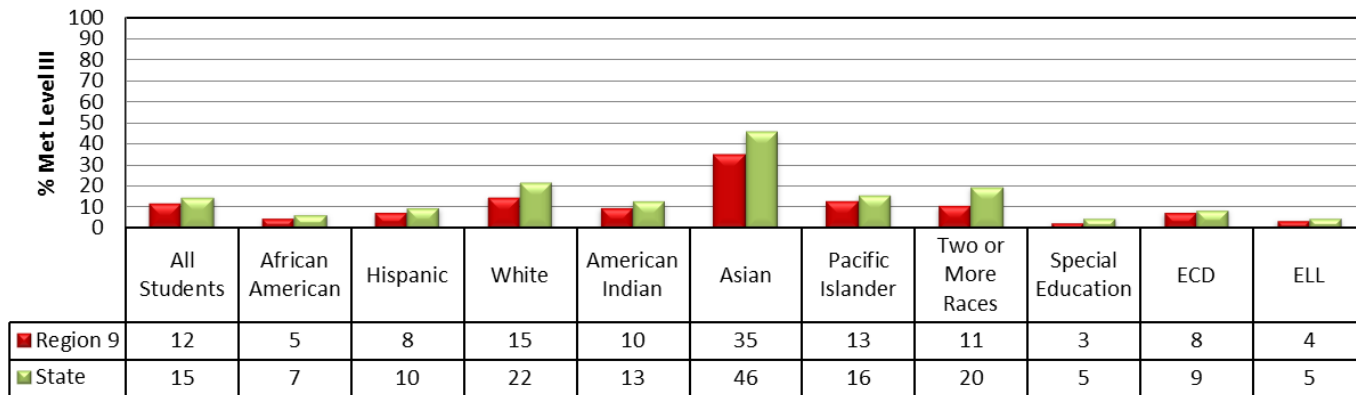




**Met LEVEL II (Phase-In 1)**



**Met LEVEL III Advanced**



Based on Preliminary Data

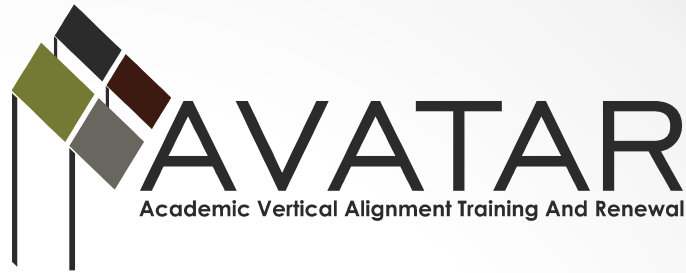
# Building Your Mathematics College Knowledge in Region 9

Time	Topic	Format	Discussion Leader	Desired Outcome
9-9:30	Introduction & Regression Lesson	P	Christina Hoffmaster Vernon College	Using a graph activity to show teachers the impact when students don't graduate h.s.
9:30-10:10	Freshmen Math Placement at MSU	P	Dr. Mark Farris MSU Math Dept.	Helping teachers to understand the basic math requirements for students entering college math courses: math calculator abilities.
10:15-10:30	Intro to Career Coach/Resume Builder	P	Brandi Brannon Vernon College	Demonstration of Career Coach: website allowing students to explore careers and their earning potential
10:30-10:45	Math Placement at Vernon College	P	Dr. Karen Gragg Vernon College	Explanation of the Texas Success Initiative Assessment to go in place August 2013 and developmental education impact for students.
10:50-11:10	Overview of EOC Scoring	P	Ward Roberts Math Coordinator, WFISD	Requirements for scoring on new math EOC exams and basic requirement levels for students in their math courses.
11:15-11:30	Certificates of Vocational Programs	P	Dr. Gary D. Harkey Vernon College	Courses and certifications available through Vernon College with math focus and the basic requirements for those courses.
12:30-2:15	Tour of MSU School of Engineering and School of Health Sciences	P	Dr. Sheldon Wang Catherine Rudy	Tour of facilities and math requirements and possibilities for students with these majors.
2:15-3:00	Tour Vernon College: CNA, LVN, Nursing, Medical Tech, Emergency Tech Depts.	P	Dr. Gary Harkey	Tour of facilities and math requirements and possibilities for students with these majors.

# Lesson Study in Region 9

- Identify an area of common weakness of students in Algebra 2, College Algebra, and pre-Calculus.
- Review content and pedagogical research.
- Design a lesson collaboratively.
- Teach it to groups of students with other team members observing.
- Refine the lesson together.
- Reteach with a second group of students.

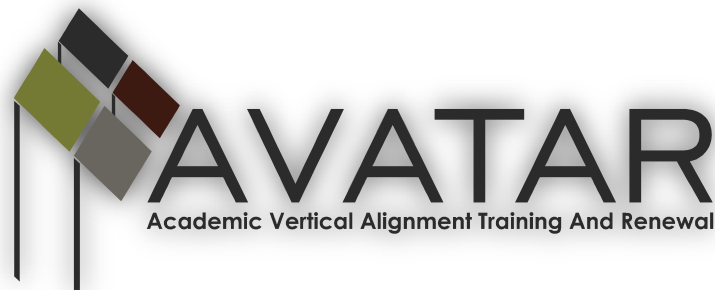
# ***Project Outcomes:***



- ▶ **Enhance the success of students graduating college-ready from high schools and prepared for smooth transitions to postsecondary education with a significant decrease in the need for developmental education.**
- ▶ **Ensure course descriptions, content learning outcomes, instructional strategies, and student and instructor expectations are aligned and communicated so that secondary students are prepared to enroll and succeed in postsecondary education at all levels.**
- ▶ **Deliver secondary and postsecondary courses** aligned to the Texas Essential Knowledge and Skills (TEKS), State of Texas Assessments of Academic Readiness (STAAR), End-of-Course (EOC) Assessments, and Texas College and Career Readiness Standards (CCRS) in Chemistry, English Language Arts, and Mathematics.
- ▶ **Develop materials and resources** for faculty, administrators, Education Service Center personnel, and P-16 leaders **to implement the vertical alignment processes and activities.**

<http://www.ntp16.notlb.com/avatar>

# *Discussion & Questions*



<http://www.ntp16.notlb.com/avatar>

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