Contextualizing Intermediate Algebra into Math Pathways

A project of the Texas State Technical College Math Department funded by the Texas Higher Education Coordinating Board.

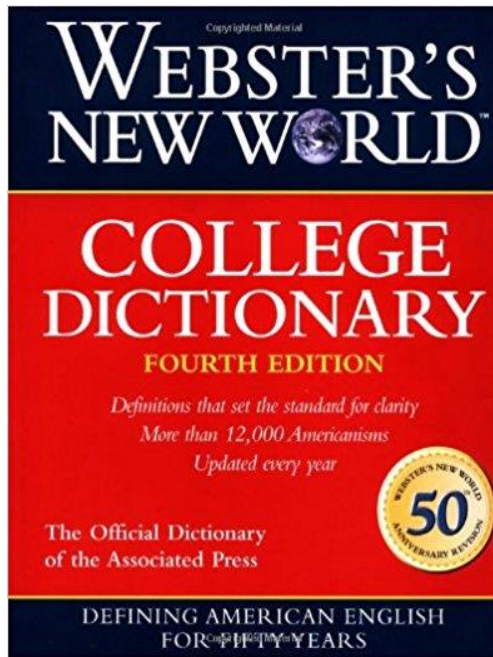Presented by:

Garry L. Sigler, Ph.D.

Shelley K. Parks

60×30TX

By 2030, at least 60 percent of Texans ages 25-34 will have a certificate or degree.

contextualize

verb con·tex·tu·al·ize \kən-ˈteks-chə-wə-ˌlīz, -chə-ˌlīz, -chü-ə-\
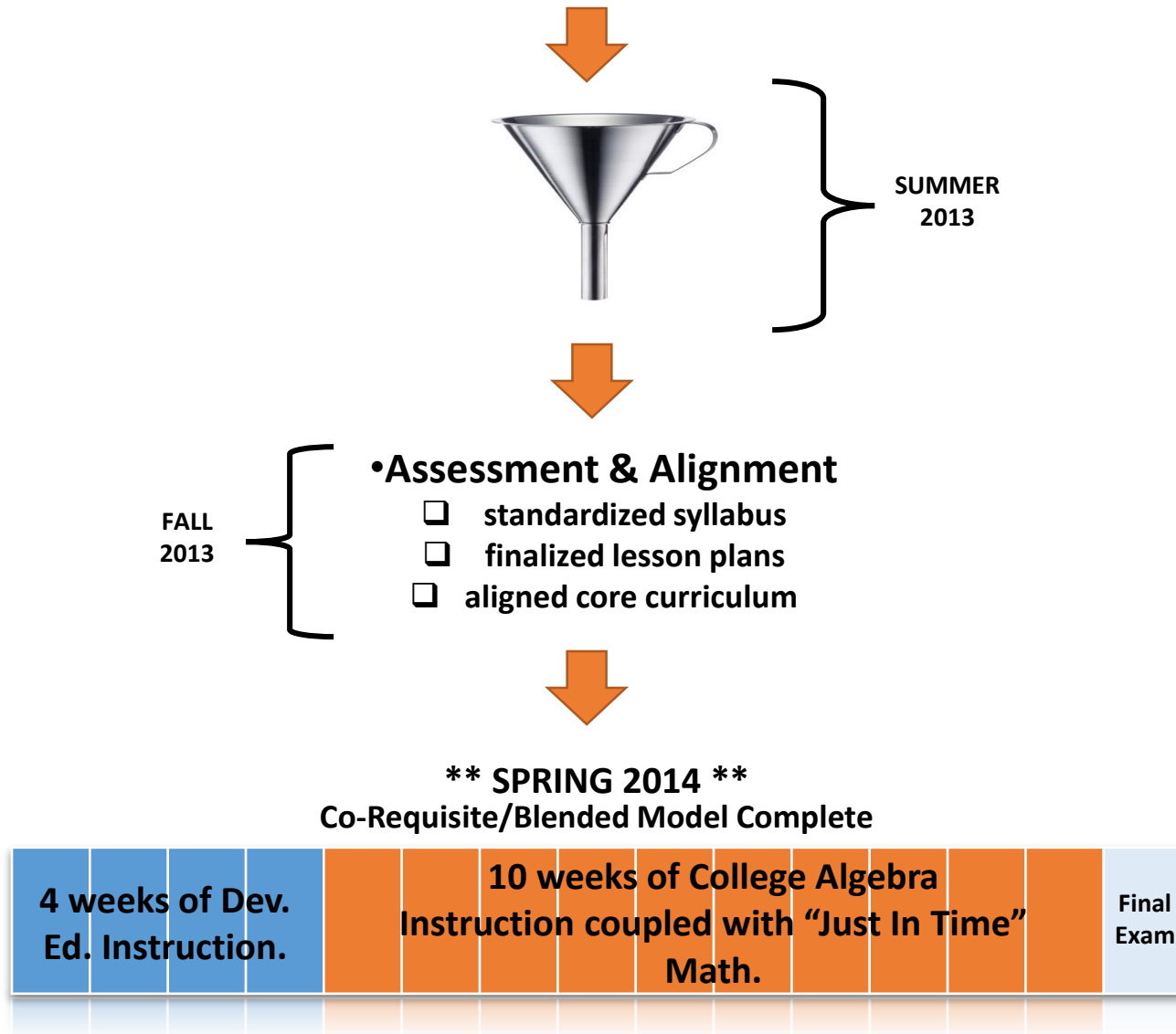
to place (a word, event, etc.) into a particular or appropriate context for the purpose of interpretation or analysis

"Conception & Outcome"

Serving Our Student Population

COs, SLOs & Curriculum for College/Intermediate Algebra

SUMMER 2013

FALL 2013

•**Assessment & Alignment**
  - ❑ **standardized syllabus**
  - ❑ **finalized lesson plans**
  - ❑ **aligned core curriculum**

** SPRING 2014 **
Co-Requisite/Blended Model Complete

| 4 weeks of Dev. Ed. Instruction. | 10 weeks of College Algebra Instruction coupled with "Just In Time" Math. | Final Exam |

Intermediate Algebra
4 hour

College Algebra

College Algebra Practicum

S3 Grant Leadership Team

Garry Sigler; garry.sigler@tstc.edu; 867-3028; Co-director

Shelley Parks; shelley.parks@tstc.edu; 867-3021; Co-director

Heather Turner; heather.turner@tstc.edu; 867-3030; Co-director

Gary Johnson; gary.johnson@tstc.edu; 867-3033; Co-director

Steve Arocha; steve.arocha@tstc.edu; 867-3155; Instructional Division Engineering

Whitney Carter, whitney.carter@tstc.edu; 867-3638; Retention Programs and Placement Services

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Mary Daniel; mary.daniel@tstc.edu; 867-3363; Admissions and Records

Mark Lewis; mark.lewis@tstc.edu; 867-3304; Mathematics Department Program Chair

Kyle Massey; kyle.massey@tstc.edu; 867-3118; Instructional Support

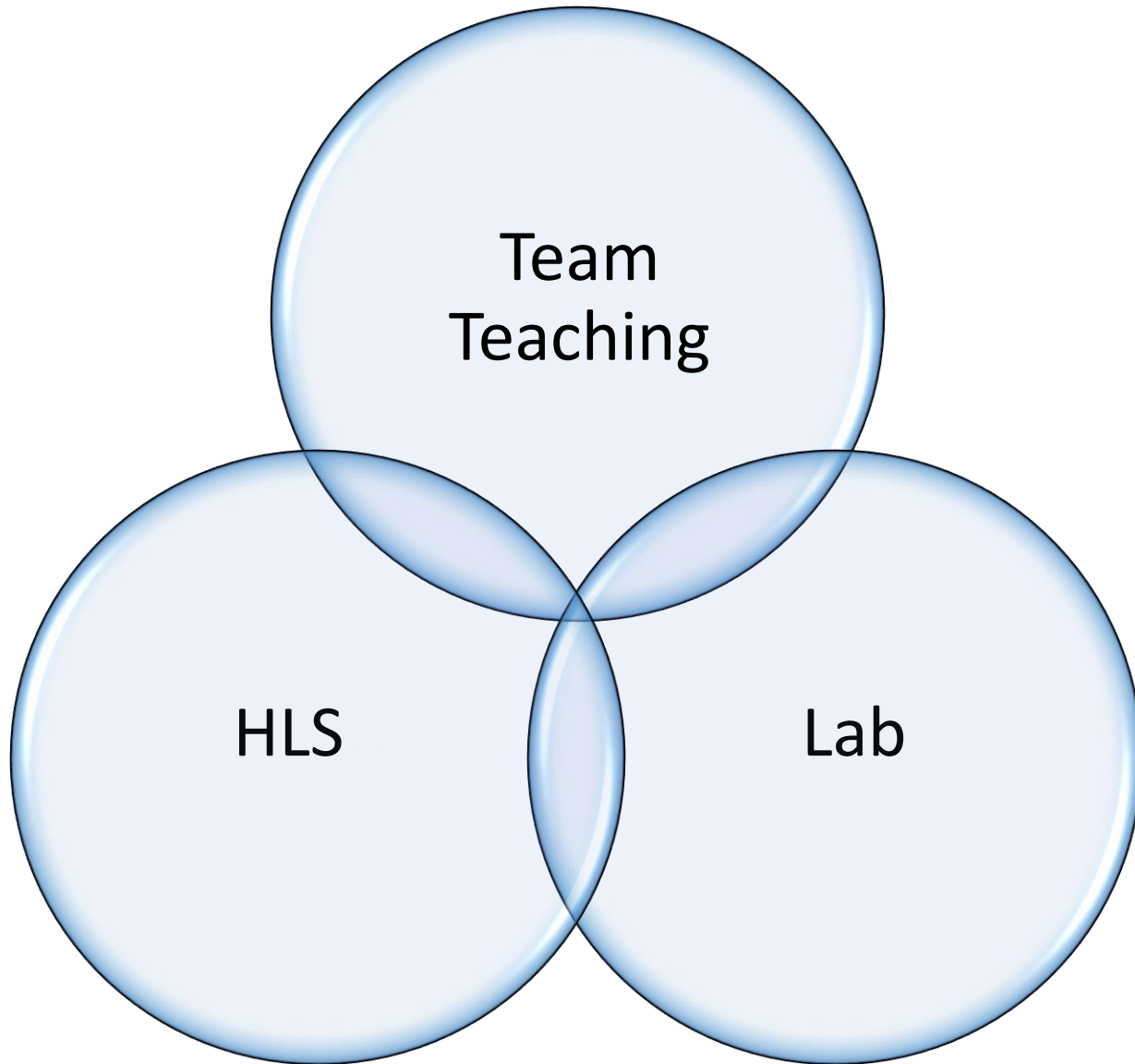Lynn Parks; lynn.parks@tstc.edu; 867-3099; Institutional Advancement

Shelli Scherwitz; shelli.scherwitz@tstc.edu; 867-3375; Office of Information Technology

The Scaling and Sustaining Success Grant (S3) is a grant awarded by the Texas Higher Education Coordinating Board to develop and implement a new four-hour college credit math course designed to provide a college-level math course with "Just in Time" remediation. Our goal is to create an accelerated pathway in which selected TSI-obligated students complete in one semester a combined Developmental Math-College credit Math course at a rate that exceeds the completion rate for students taking the current two-course sequence .
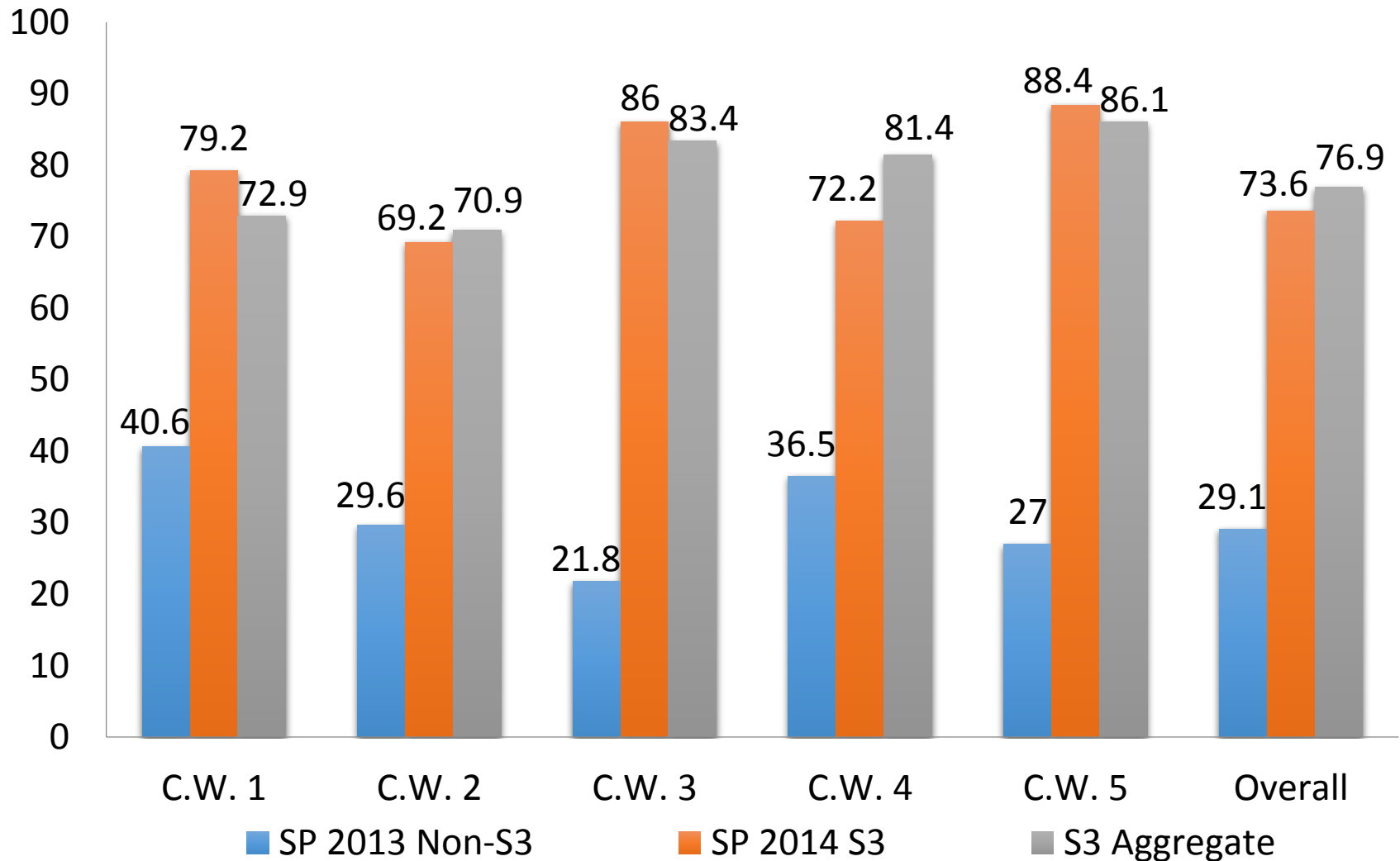
The first two pilot classes will be launched in Summer 2013. Dr. Johnson and Ms. Turner will teach a scheduled section on M-W 10:00am-11:50am and Dr. Sigler and Mrs. Parks will teach a scheduled section on T-Th 10:00am-11:50am. These sections are labeled **MATH 1314 10L1** or **10L2 College Algebra** in the Summer Class Schedule. In these sections we will be piloting a College Algebra curriculum with "Just in Time" remediation in a four-hour format. In future offerings, students will be selected based on their TSI assessment scores, recommendations, and interviews. Please help us get the word out about these two pilot classes being offered this summer.
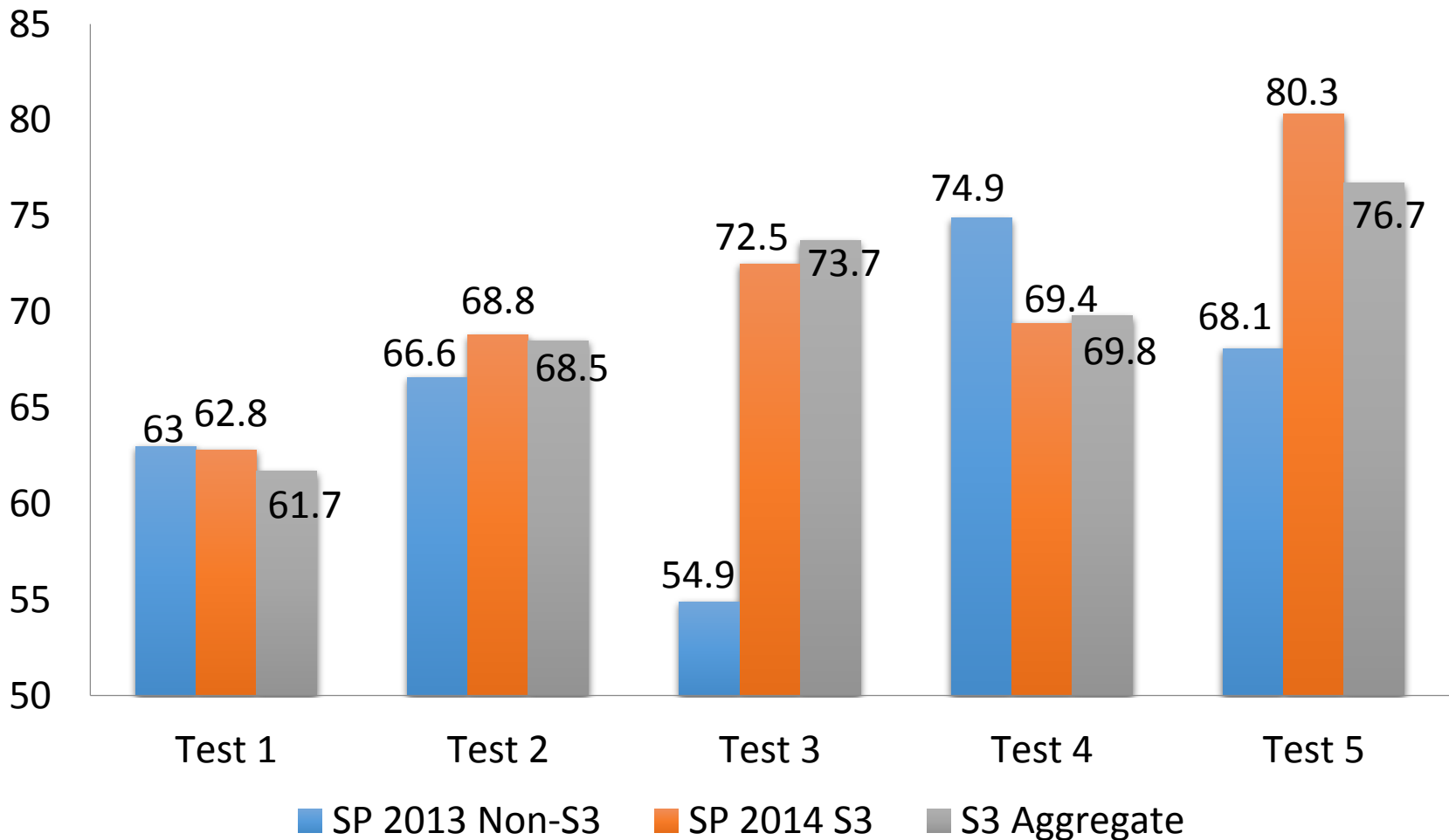
Math 1314 Daily Tentative Schedule SP 2017—MW

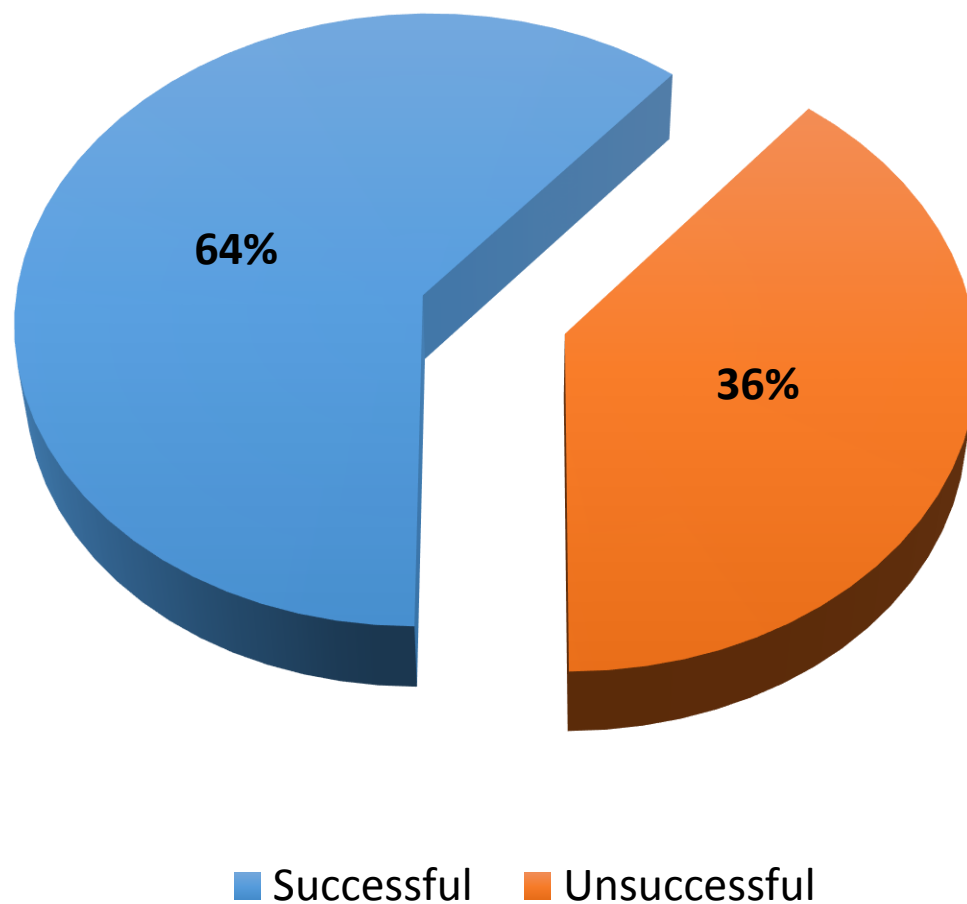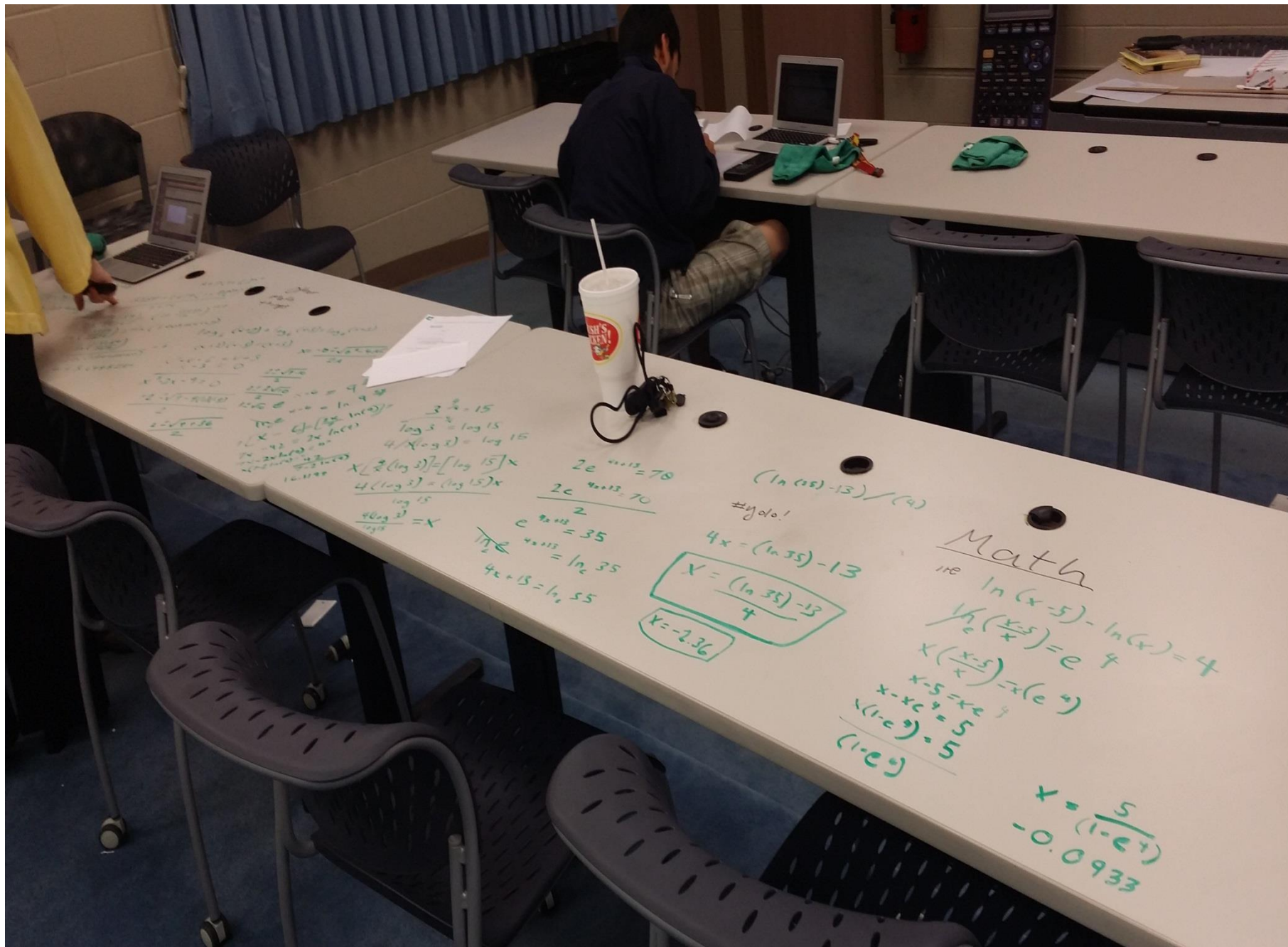| Week	Date	Monday	Date	Wednesday
1	01/09	Orientation 1.5 Polynomials and Factoring	01/11	2.1(a) Linear Equations in One Variable 2.2 Linear Inequalities in One Variable
2	01/16	**Martin Luther King, Jr. Holiday**	01/18	1.6 The Complex Number System 2.3 Quadratic Equations in One Variable
3	01/23	**Test 1**	01/25	2.5 Rational Expressions and Equations
4	01/30	2.6 Radical Equations	02/01	3.1 The Cartesian Coordinate System 3.2 Linear Equations in Two Variables
5	02/06	3.3 Forms of Linear Equations 3.4 Parallel and Perpendicular Lines	02/08	**Test 2**
6	02/13	4.1 Relations and Functions	02/15	4.2(a) Linear and Quadratic Functions
7	02/20	4.5 Combining Functions	02/22	4.6 Inverses of Functions
8	02/27	**Test 3**	03/01	5.1 Introduction to Polynomial Equations and Graphs
9	03/13	5.2 Polynomial Division and the Division Algorithm	03/15	5.3 Locating Real Zeros of Polynomials (Rational Zero Test)
10	03/20	5.4 The Fundamental Theorem of Algebra	03/22	6.1(a) Rational Functions
11	03/27	**Test 4**	03/29	7.1 Exponential Functions and Their Graphs 7.2 Applications of Exponential Functions
12	04/03	7.3 Logarithmic Functions and Their Graphs	04/05	7.4 Properties and Applications of Logarithms
13	04/10	7.5 Exponential and Logarithmic Equations	04/12	**Test 5**
14	04/17	8.2 Matrix Notation and Gaussian Elimination	04/19	8.4 The Algebra of Matrices 8.5 Inverses of Matrices
15	04/24	Review for Final Exam	04/26	**Final Exam**

Aggregate Comparison of Mean Coursework

	C.W. 1	C.W. 2	C.W. 3	C.W. 4	C.W. 5	Overall
SP 2013 Non-S3	40.6	29.6	21.8	36.5	27	29.1
SP 2014 S3	79.2	69.2	86	72.2	88.4	73.6
S3 Aggregate	72.9	70.9	83.4	81.4	86.1	76.9

Aggregate Comparison of Test Means

Intermediate & College Algebra S3 Success

64%

36%

■ Successful ■ Unsuccessful

$3^{4/x} = 15$

$\log 3^{4/x} = \log 15$

$4/x (\log 3) = \log 15$

$x\left[\frac{4}{x}(\log 3)\right] = [\log 15]x$

$4(\log 3) = (\log 15)x$

$\frac{4\log 3}{\log 15} = x$

$2e^{4x+13} = 70$

$\frac{2e^{4x+13}}{2} = \frac{70}{2}$

$e^{4x+13} = 35$

$\ln e^{4x+13} = \ln 35$

$4x+13 = \ln 55$

$(\ln(35)-13)/(4)$

#ydlo!

$4x = (\ln 35) - 13$

$$\boxed{x = \frac{(\ln 35) - 13}{4}}$$

$\boxed{x = -2.36}$

Math

$\ln(x-5) - \ln(x) = 4$

$\frac{1}{e}\left(\frac{x-5}{x}\right) = e^4$

$x\left(\frac{x-5}{x}\right) = x(e^4)$

$x-5 = xe^4$

$x - xe^4 = 5$

$\frac{x(1-e^4) = 5}{(1-e^4)}$

$x = \frac{5}{(1-e^4)}$

-0.0933

"Growth"

Scaling & Sustaining Success

The Contextualized Model

NCBM
4 hour

Gen Ed Math Course
1314 or 1316
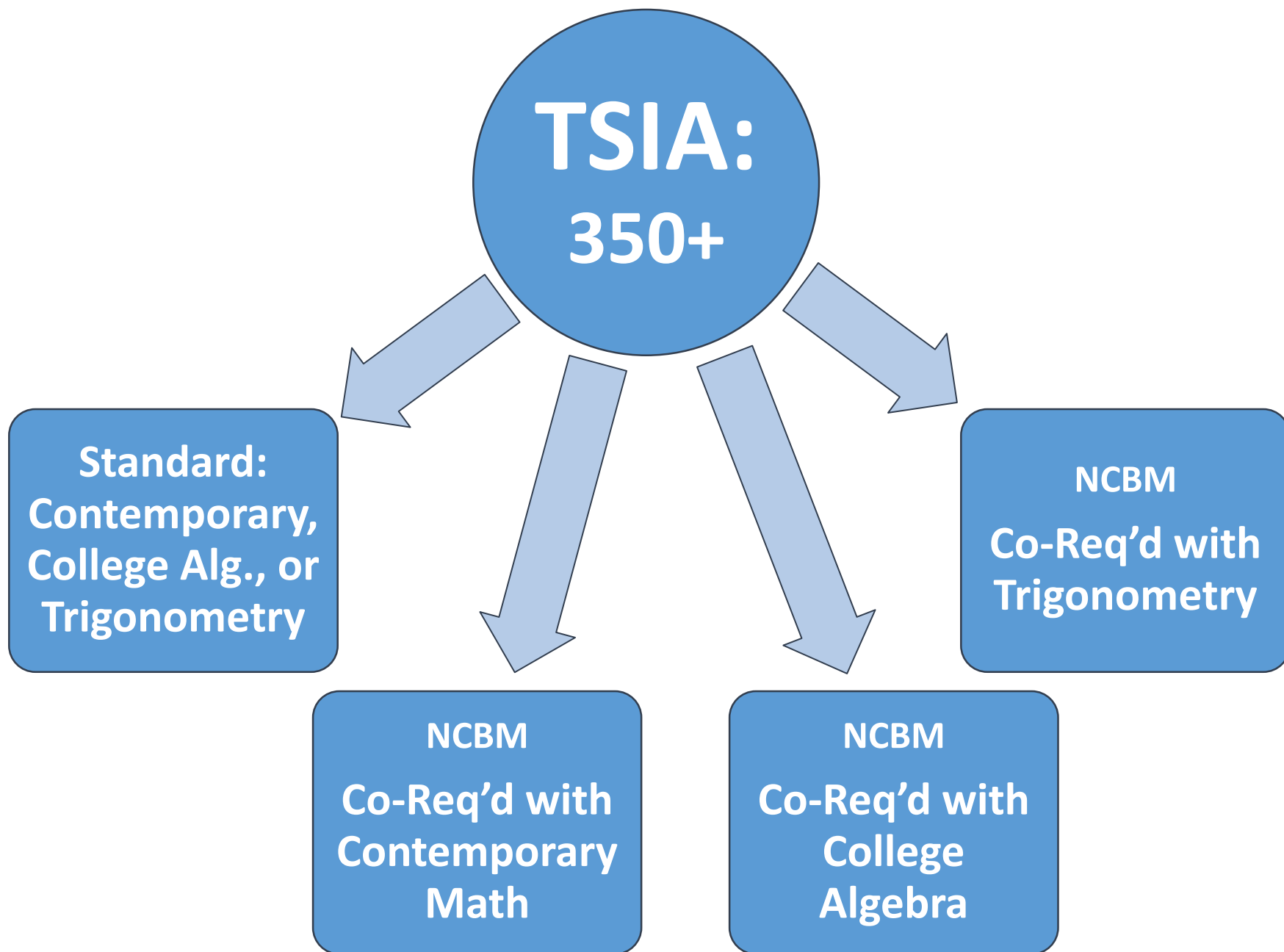
Gen Ed Practicum

Math Pathways
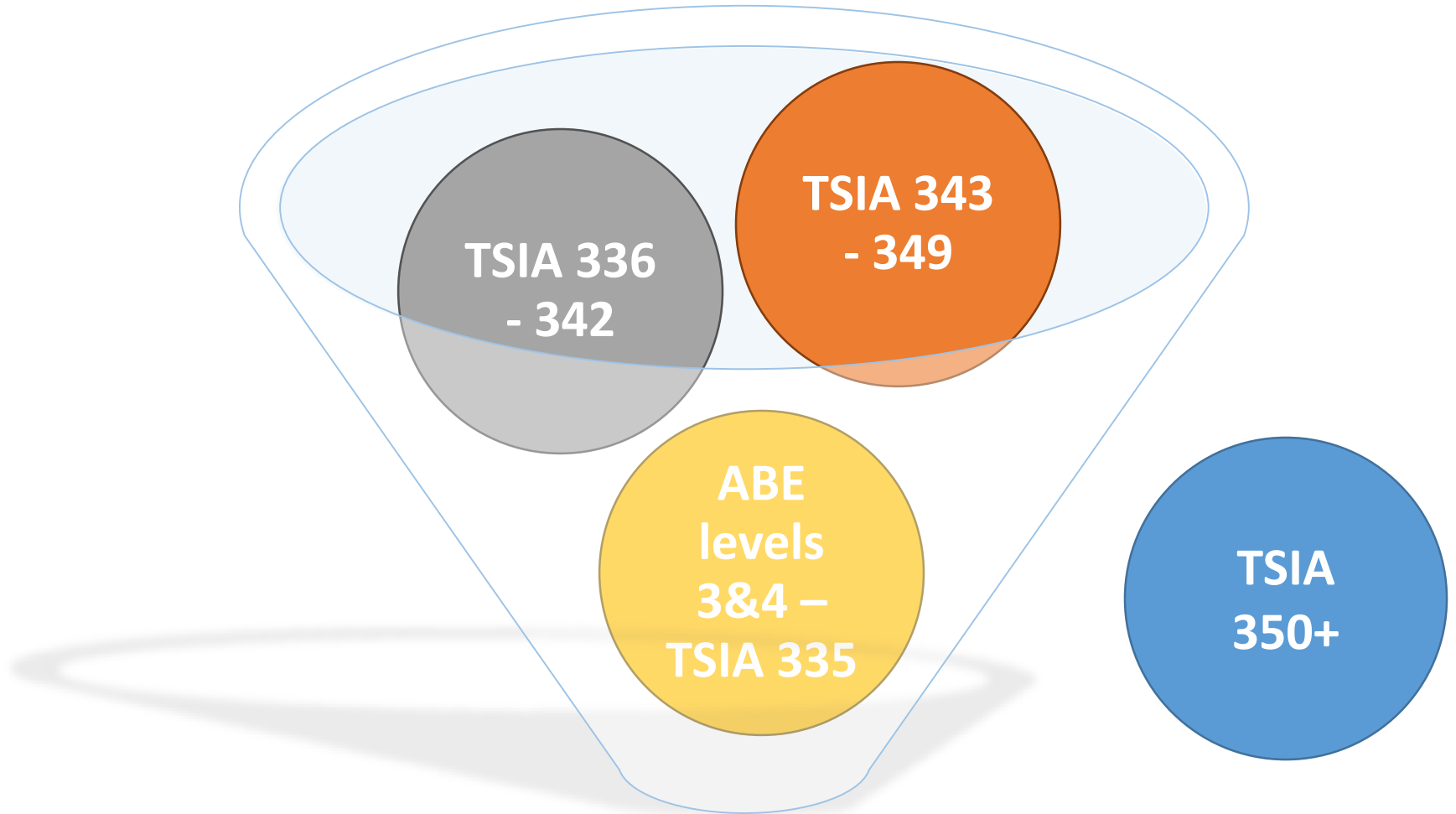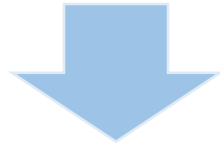
TSIA: 343-349

Standard Intermediate Algebra

NCBM Co-Req'd with Contemporary Math

NCBM Co-Req'd with College Algebra

NCBM Co-Req'd with Trigonometry

It's a simple equation

Math "L" Series College Algebra Pathway

MATH 1314.10LX (3 hours) **+** **NCBM 0014.10LX** (1 hour) **=** **4-hour course**

The Reward:
Accelerate and reduce time to degree completion

TSTC
Texas State
Technical College.

Benefits:

- Just-in-Time remediation

- Student tutors in the classroom

- One extra hour per week to begin assignments in class

- Two instructors co-teaching give multiple perspectives

- Incoming students are less likely to repeat the course

- Repeating students tend to be successful after one attempt

- Military- and TSI-exempt students highly recommend this course

- Promotion of active learning in the classroom

- Sense of community with peer-to-peer tutoring

Eligible students must have a TSI score of 343+ or completion of DMTH 0200 or DMTH 0350 with a C or better.

For more details, please contact:
Dr. Garry Sigler (ext. 3028)
Shelley Parks (ext. 3021)
Elaine Sulak (ext. 3536)

It's a simple equation

Math "L" Series College Trigonometry Pathway

MATH 1316.10LX
3 hours

+

NCBM 0016.10LX
1 hour

=

4-hour course

The Reward:
Accelerate and reduce time to degree completion

TSTC
Texas State Technical College.

Benefits:

- Just-in-Time remediation

- Student tutors in the classroom

- One extra hour per week to begin assignments in class

- Two instructors co-teaching give multiple perspectives

- Incoming students are less likely to repeat the course

- Repeating students tend to be successful after one attempt

- Military- and TSI-exempt students highly recommend this course

- Promotion of active learning in the classroom

- Sense of community with peer-to-peer tutoring

Eligible students must have a TSI score of 343+ or completion of DMTH 0200 or DMTH 0350 with a C or better.

For more details, please contact:
Dr. Garry Sigler (ext. 3028)
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Elaine Sulak (ext. 3536)

It's a simple equation

Math "L" Series Contemporary Math Pathway

MATH 1332.10LX
3 hours

+

NCBM 0032.10LX
1 hour

=

4-hour course

The Reward:
Accelerate and reduce time to degree completion

TSTC
Texas State Technical College.

Benefits:

- Just-in-Time remediation

- Student tutors in the classroom

- One extra hour per week to begin assignments in class

- Incoming students are less likely to repeat the course

- Saves one semester of math in the student's schedule by skipping DMTH 0200

- Ability to achieve TSI compliance and earn transferable math credit in the same semester

- Accelerates time to degree

Eligible students must have a passing grade in DMTH 0100 or a score of 343+ on the TSI.

For more details, please contact:
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