



Sam Houston  
State University

# Expanding the Use of an Existing Course/Program- level Critical Thinking Assessment to the Institutional Level

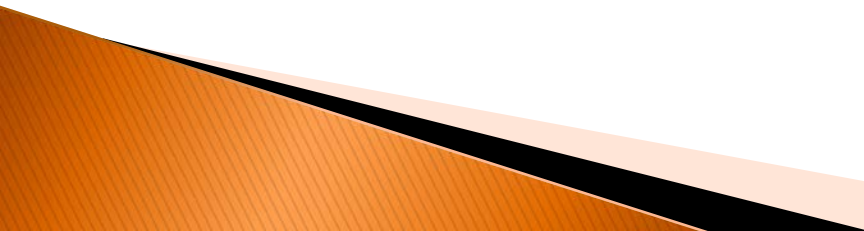
**Glenn M. Sanford**  
Associate Dean,  
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**Jeff Roberts**  
Director of Assessment

# First, a show of hands...

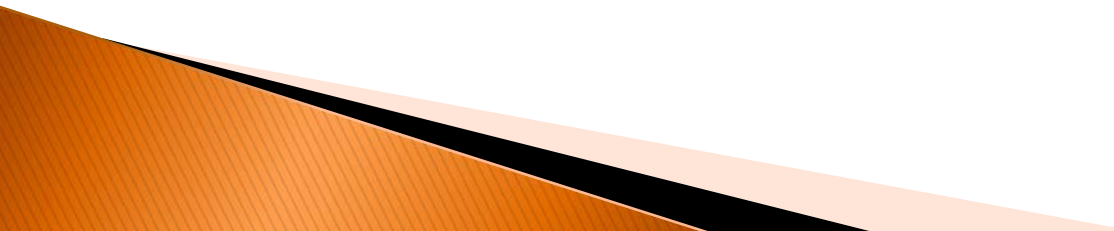
- ▶ How many of you are from:
  - Public Institution?
  - Private Institution?
  - 2-year College?
  - 4-year University?

# About Sam Houston State University

- ▶ 4-year, public university approximately 1-hour north of Houston, TX.
  - ▶ Student enrollment of approximately 20,000
  - ▶ Classified as a “Doctoral University: Moderate Research Activity” by the Carnegie Classification of Institutions of Higher Education
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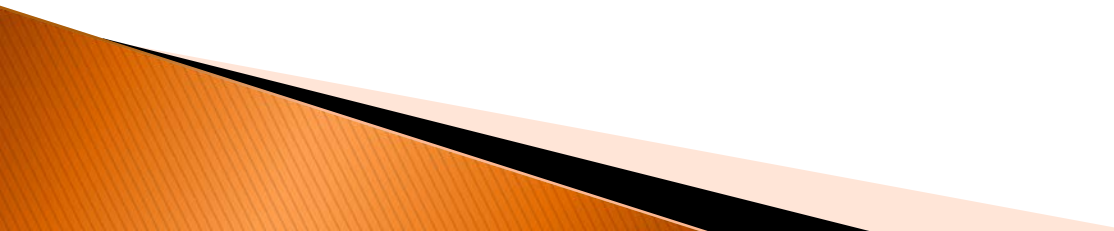
# Core Learning Objectives

According to the THECB, all public institutions should assess student attainment of six core learning objectives:

- ▶ **Critical Thinking**
  - ▶ **Communication**
  - ▶ **Empirical and Quantitative Reasoning**
  - ▶ **Teamwork**
  - ▶ **Personal Responsibility**
  - ▶ **Social Responsibility**
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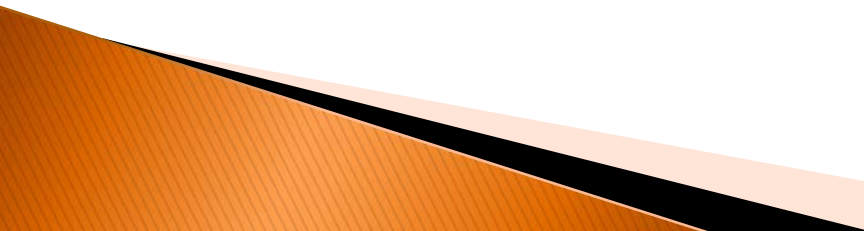
# THECB Definition of Critical Thinking

“creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information”



# Critical Thinking Assessment at SHSU

# Texas Assessment of Critical Thinking Skills (TACTS)

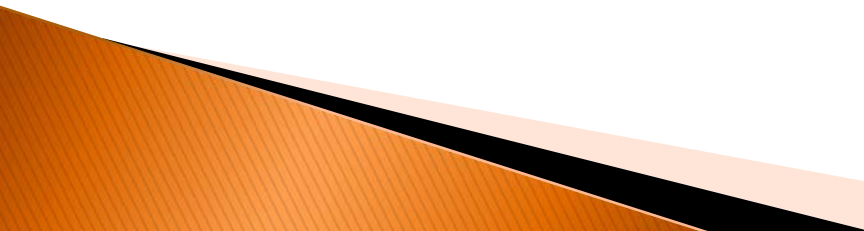
- ▶ Philosophy Program Critical Thinking Course
  - ▶ Interdisciplinary collaboration
    - Philosopher & psychology doctoral student
  - ▶ 2003 AACSB standards
    - Analytic thinking
    - Reflective thinking
  - ▶ 2 Statisticians from Economics and International Business
  - ▶ PHIL Adoption in response to SACS needs
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# Adoption & Retention Trade-offs

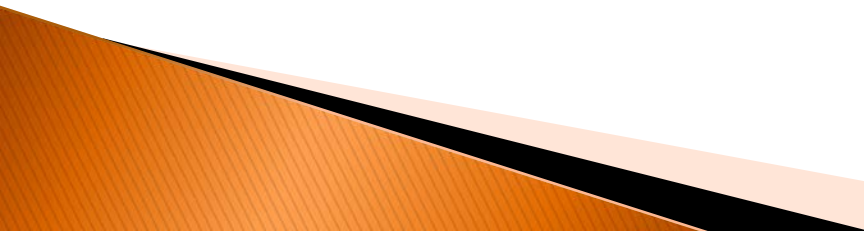
- ▶ All, except TACTS, require paying for tests
- ▶ Multiple Choice
  - Quick and cheap scoring
  - Limited training and ease of administration
  - Questions about data's depth
- ▶ Written responses
  - Substantial investment required for scoring
    - Training scorers (inter-rater reliability)
    - Time to score
  - Greater data depth



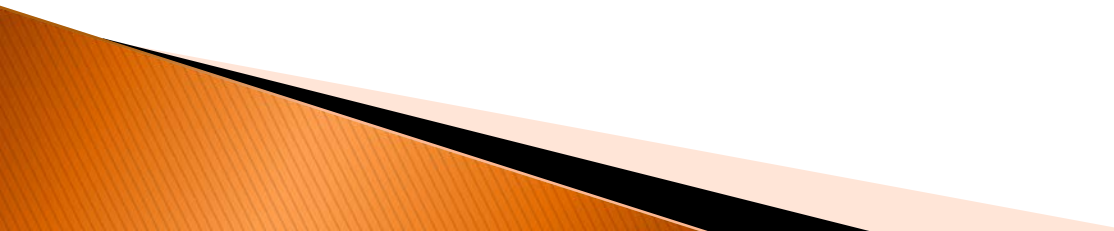
# Course-based Critical Thinking Assessment

- ▶ Philosophy adopted TACTS for assessing all Critical Thinking courses
  - ▶ Holistic assessment of student improvement
  - ▶ Added specific assessment of probabilities
  - ▶ Added baseline for student improvement
  - ▶ Expanding item analysis
  - ▶ Investigating TACTS–CAT relationship
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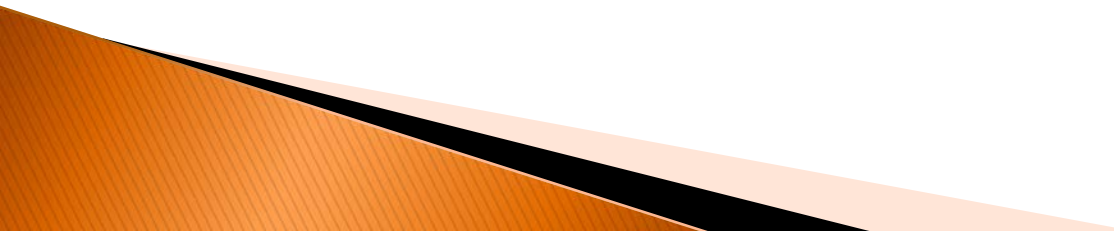
# Partnership Between Philosophy and OAPA

- ▶ With the adoption of the new Core Objective of Critical Thinking, the Philosophy Programs existing assessment offered a natural opportunity.
  - ▶ Wanted to continue the course–embedded assessment, but wanted to collect student ID's along with student responses.
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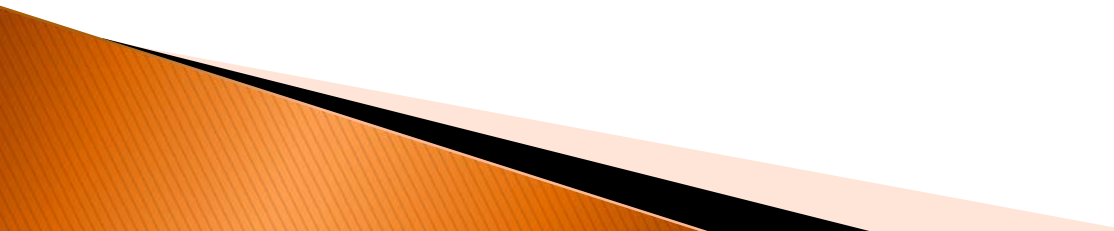
# New Equipment

- ▶ OAPA purchased a new Scantron Reader Machine (EZData Reader) and appropriate Scantron reader software.
  - ▶ OAPA also purchased Scantrons for use by the Philosophy Program when conducting the TACTS test.
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# New Procedures

- ▶ Philosophy faculty still administer the TACTS test; however, students are instructed to include their ID numbers in the appropriate location on the Scantron form.
  - ▶ Completed tests are returned to OAPA for scoring and analysis.
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# Data Analysis

- ▶ OAPA provides the Philosophy Program with both raw data, as well as a completed report.
  - ▶ Capturing student ID's allows for OAPA to quickly identify those student who took both the pre- and post-test.
  - ▶ Student pre- and post-test scores are analyzed using a dependent samples  $t$ -test.
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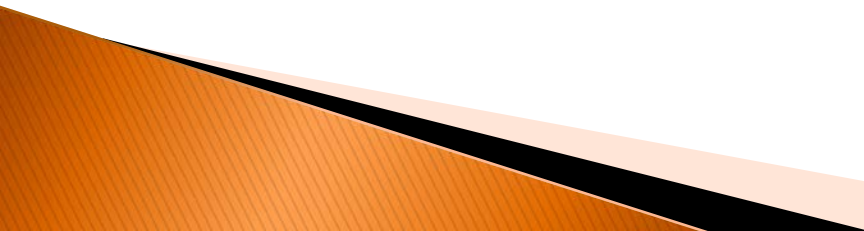
# Overview of 2015–2016 Results

- ▶ For the 2015–2016 year, a total of 394 student provided their ID numbers and completed both the pre- and post-test.
- ▶ On average, students scores increased approximately by 5 percentage points, (35.70% to 40.50%).
- ▶ This difference was statistically significant  $t(393) = -6.89, p < .001$ ; however, the effect size was small (Cohen's  $d$  of 0.42).

**How are these data being  
used?**

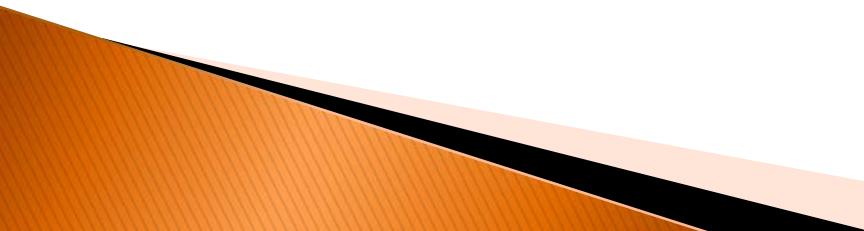


# By the Philosophy Program

- ▶ Compliance with SACS requirements
  - ▶ Starting point for discussing objectives
  - ▶ Quality Assurance/Quality Control across multiple sections/instructors while allowing broad academic freedom
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# Continuing Questions

- ▶ Parity between on-line and in-person sections?
  - ▶ Moving toward item analysis
    - Focusing course-specific goals
    - Measuring specific outcomes
    - Feedback on individual strengths/weaknesses
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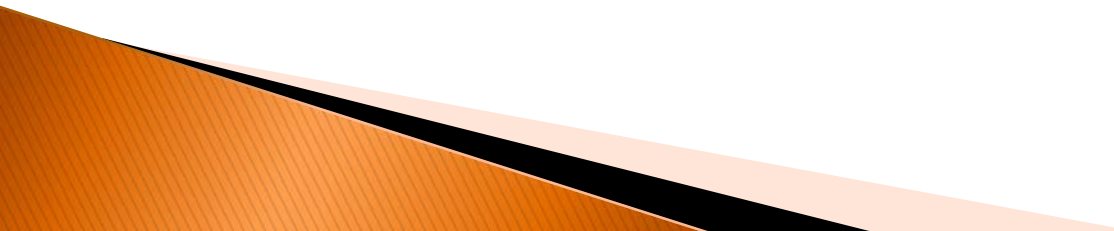
# Secondary Research Project

- ▶ Academic interest in metacognition and intellectual humility
  - Dunning–Kruger effect
  - Concerns about student motivation/engagement
  - Questions about the limits of rational argument
- ▶ 2 philosophers partner with OAPA
  - Measuring student performance vs. estimated performance
  - Fall 2016 data gathered
  - Expansion beyond PHIL 2303

# By OAPA

- ▶ TACTS data are only one piece of a much larger institutional puzzle.
- ▶ TACTS test data will serve as an additional measure of critical thinking at SHSU. Other measures include:
  - The Critical Thinking Assessment (CAT) Test
    - End-of-Experience, Direct Measure
  - The National Survey of Student Engagement (NSSE)
    - Freshman/Senior, Indirect Measure

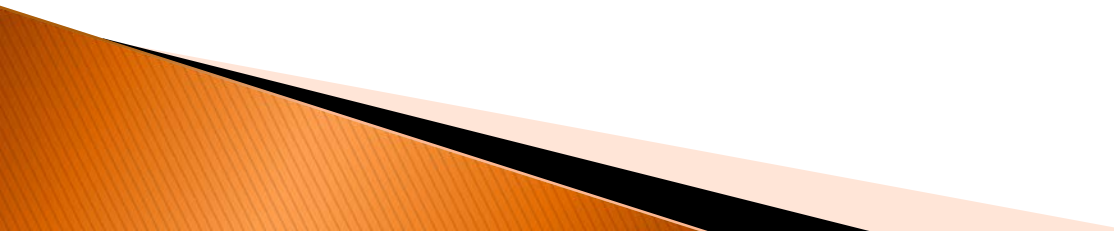
# Core Curriculum Assessment Committee

- ▶ These data will join other core assessment data that are to be examined by the Core Curriculum Assessment Committee
  - ▶ Using all collected core assessment data, the Committee will work to highlight areas of strength, identify areas of weakness, and create strategies for improvement.
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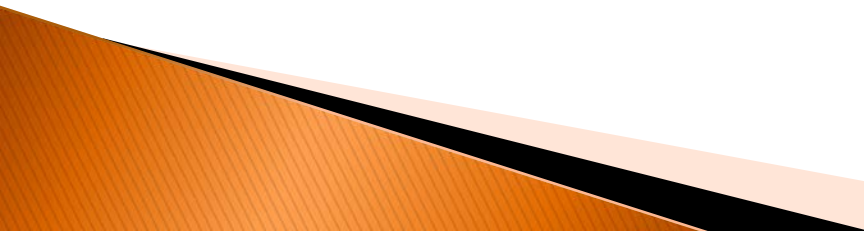
# Secondary Data Analysis

- ▶ OAPA can also use the collected Student ID's to gather additional demographic and student performance variables from the Institutional Research Office.
  - e.g., gender, ethnicity, major, GPA, SAT/ACT scores
- ▶ These variables can be used to conduct robust secondary data analysis.
  - Disaggregating student performance by demographic variables
  - Correlating Student Performance with additional performance metrics

# Secondary Data Analysis

- ▶ By disaggregating student data, and better understanding its relationship with other metrics of student success, our institution will better understand who these students are, who are succeeding, and who need help.
  - ▶ This will allow us to better tailor curriculum improvements and student interventions.
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# TACTS/CAT Comparison

- ▶ SHSU is also using the Critical Thinking Assessment Test (CAT) to assess Critical Thinking at the Institutional Level
  - ▶ In 2016, OAPA also administered the CAT within a Critical Thinking section that also took the TACTS.
  - ▶ Opens the door for a comparative analysis of student scores on both instruments.
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# Questions?

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