



Sam Houston
State University

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

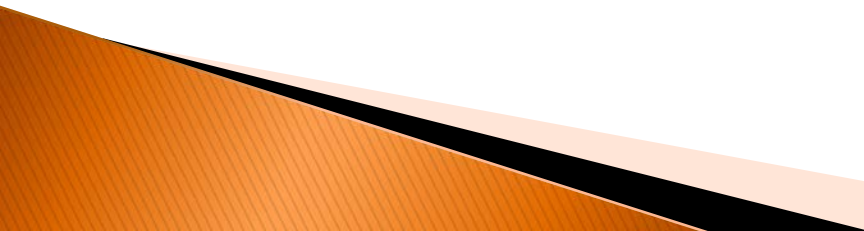
Glenn M. Sanford
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First, a show of hands...

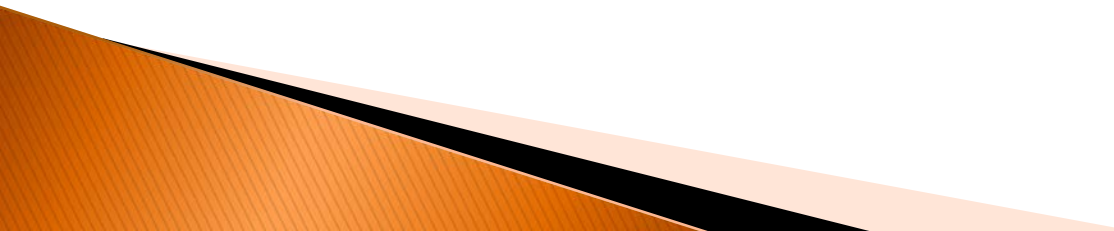
- ▶ How many of you are from:
 - Public Institution?
 - Private Institution?
 - 2-year College?
 - 4-year University?

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:

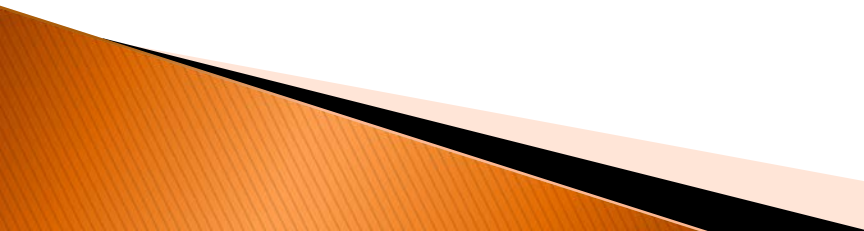
- ▶ **Critical Thinking**
 - ▶ **Communication**
 - ▶ **Empirical and Quantitative Reasoning**
 - ▶ **Teamwork**
 - ▶ **Personal Responsibility**
 - ▶ **Social Responsibility**
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THECB Definition of Critical Thinking

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

Critical Thinking Assessment at SHSU

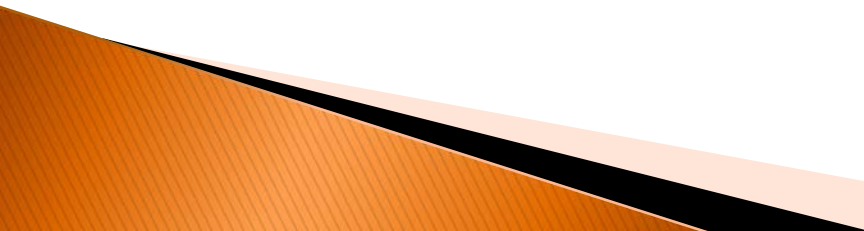
Texas Assessment of Critical Thinking Skills (TACTS)

- ▶ 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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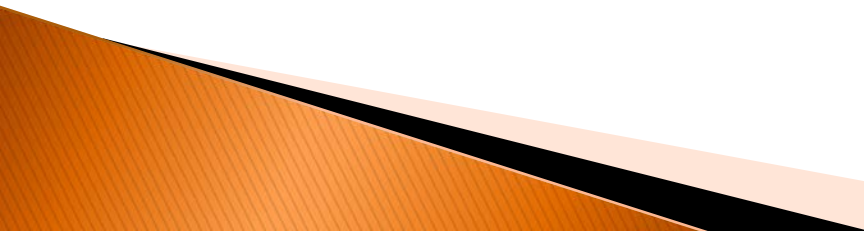
Adoption & Retention Trade-offs

- ▶ 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

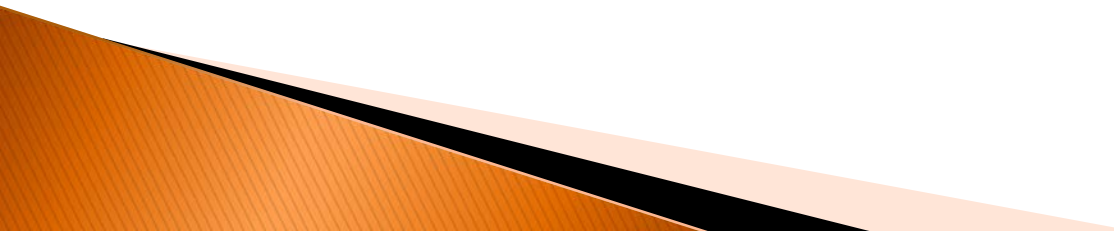
Course-based Critical Thinking Assessment

- ▶ 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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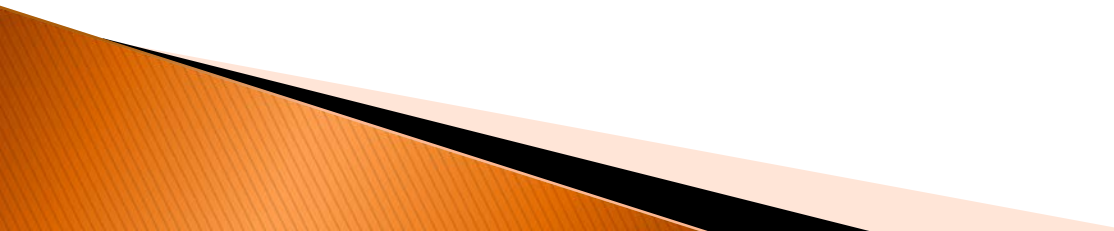
Partnership Between Philosophy and OAPA

- ▶ 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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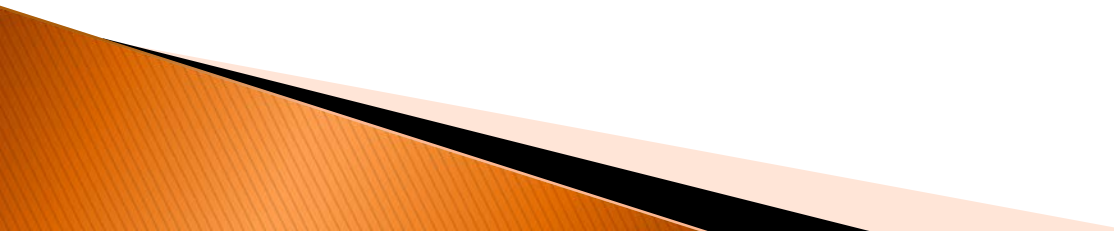
New Equipment

- ▶ 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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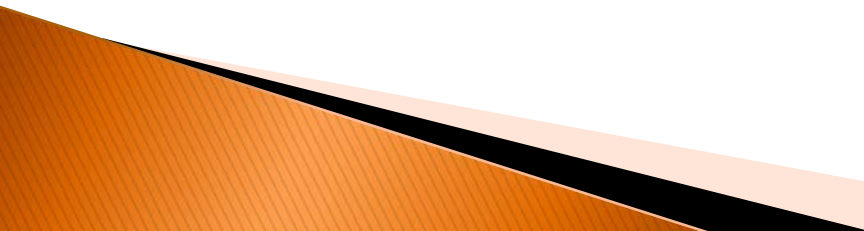
Overview of 2015–2016 Results

- ▶ 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).

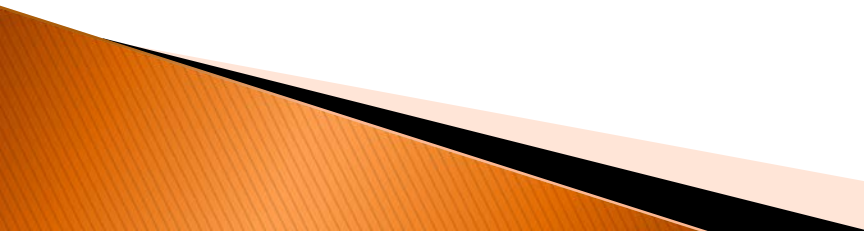
**How are these data being
used?**



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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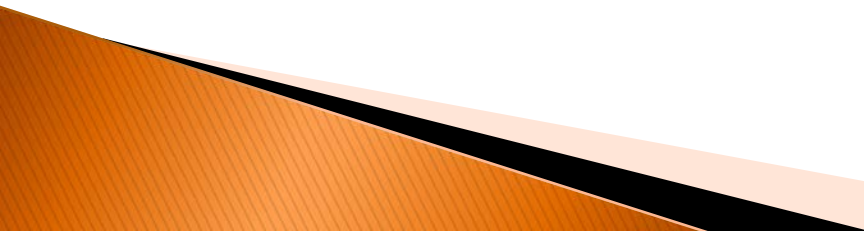
Secondary Research Project

- ▶ 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

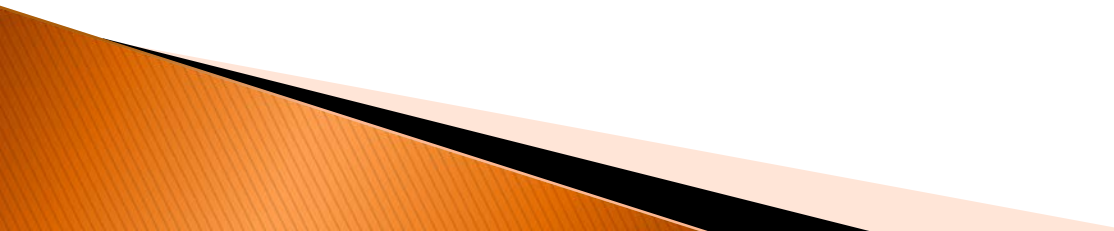
Core Curriculum Assessment Committee

- ▶ 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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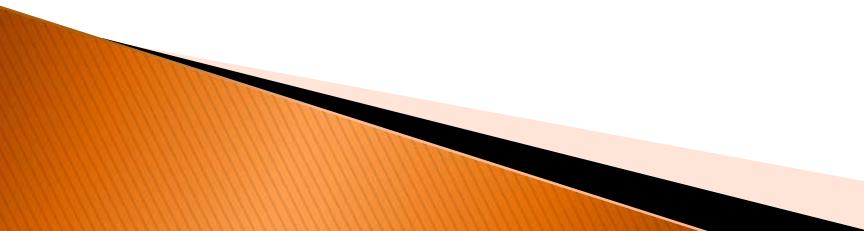
Secondary Data Analysis

- ▶ 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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