CORE ASSESSMENT REPORT TWU 2016-17

OBJECTIVES: EMPIRICAL & QUANTITATIVE SKILLS AND TEAMWORK

SUMMARY

For the 2016-17 academic year, TWU assessed the objectives of *Empirical & Quantitative Skills* and *Teamwork* in the following undergraduate general education areas as assigned by the state:

- Communications (Teamwork only)
- Mathematics (Empirical & Quantitative Skills only)
- Life & Physical Sciences (both Teamwork and Empirical & Quantitative Skills)
- Creative Arts (Teamwork only)
- Social & Behavioral Sciences (Empirical & Quantitative Skills only)

The objectives assessed in 2016-17 are defined by THECB as follows:

- **Empirical & Quantitative Skills (EQS) -** to include the manipulation and analysis of numerical data or observable facts resulting in formed conclusions;
- **Teamwork (TW) -** to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

Facets of each objective are captured through suites of narrower criteria. The objective of *Empirical & Quantitative Skills*, for instance, includes the criteria of Data Representation and Calculation. *Teamwork* includes Fosters Constructive Team Climate and Perspective Taking. These criteria are assessed by volunteer raters in organized sessions, who employ a modified VALUE rubric on a three-point scale, with a 1 representing an unmet standard, a 2 indicating a mixed or partial success, and a 3 indicating clear success. Our currently published goal is that 65% of students will meet at least level 2 for any criterion.

For *Empirical & Quantitative Skills*, 68% of students met that criterion for success.

- Among first-year students, just under 65% of constituents met the criterion for success. All other grade levels exceeded the 65% benchmark.
- Both first-time-in-college (FTIC) and transfer student populations came in above goal, and both full-time and part-time students did so, too.
- Among *Empirical & Quantitative Skills* criteria that were often rated and tended to have more robust reliability, Calculation, Evidence Analysis, and Data Representation stood out as noteworthy strengths (77.07%, 76.29%, and 76.42% of students meeting the criterion for success, respectively).
- Assumptions, Data Interpretation, and Propose Solutions stood out as relative weaknesses (49.18%, 59.75%, and 49.69%, respectively).
- Finally, Application/Analysis (69.19%) and Define Problem (64.94%) stood out as criteria that, for how frequently faculty selected them as relevant to assigned tasks, may require more scaffolding and explicit instruction.

For *Teamwork,* 85.39% met the criterion for success.

- All grade levels from first-year to senior met the criterion for success for *Teamwork*.
- Both first-time-in-college (FTIC) and transfer student populations came in above goal, and both full-time and part-time students did so, too.
- Among *Teamwork* criteria that were often rated and tended to have more robust reliability, the following criteria stood out as noteworthy strengths: Contributes to Team Meetings (91.43%), Facilitates the Contributions of Team Members (93.77%), Fosters Constructive Team Climate (93.61%), and Responds to Conflict (91.75%).
- It is worth noting, however, that many *Teamwork* criteria, including the ones just listed, are frequently unratable in artifacts submitted by faculty. Unless raters can see team member interactions directly or else assess 360-degree reflections or 360-degree peer reviews collected after group activities (anonymous peer reviews being ideal for this purpose), many of these criteria must be marked N/A. "N/A" ratings are higher for *Teamwork* than for any other objective assessed since our pilot (averaging 31.21% during this assessment year). The percentages in the above cases may skew high both because so many of these assessments are mediated by the perspectives of students writing about their experiences and because there may be a selection-bias effect when it comes to the kind of faculty who will think carefully, or talk to the assessment office beforehand, about what kind of assessment artifacts would be measurable.
- Apply Criteria through Peer Review (60.20% meeting the criterion for success), Constructive Framing of Peer Review (61.85%), and Knowledge of Cultural Worldview Frameworks (57.69%) stood out as relative weaknesses. One of the challenges to the peer review criteria is that the pool of faculty most likely to use peer review, first-year composition instructors, are often graduate students still building their experience with such activities. Peer review can be tough to teach well, and by the time graduate teaching students become good at it, they often graduate and leave, to be replaced by someone for whom the challenges are new.
- Despite the high percentages of students reported here as meeting the criterion for success for *Teamwork*, this remains the toughest of the six core objectives to assess well. We observe however that successful teamwork draws heavily at least four other objectives: *Communication* to explain oneself to others and comprehend their ideas, *Critical Thinking* to process conflicting points of view within the team, *Personal Responsibility* to set and meet obligations and timetables, *Social Responsibility* to consider broader contexts and societal impacts stemming from or influencing the group's decisions. To the extent that we can improve student learning in the other areas, we may be able to improve their teamwork skills as well.

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RECOMMENDATIONS

New recommendations will appear near the top of these lists in each report. Recommendations from previous reports may reappear later because they bear repeating or for the benefit of those new to the core community.

Foster academic integrity. When students take short cuts on readings and assignments, they may miss out on the learning experiences faculty planned for them. Ensuring honest engagement may, conversely, improve learning. Both of the resources just linked have suggestions for improving academic integrity without acting like police.

Set appropriate challenge levels. A heavy cognitive load impairs performance on all criteria, not just the one under stress. Give students a difficult analytical challenge and their grammar will suffer, too. We saw this sort of thing a lot in the assessed artifacts. First-year composition asked students to do something difficult: analyze two articles with competing opinions and make an argument for what value or principle was most driving the authors apart. A student's organization scores for such an assignment will be lower than they would be for a class in which they were simply asked to summarize a textbook chapter, wherein the structure is already partly baked in. In some cases, a challenge may have been set too high. We saw several assignments that asked students to summarize, or in some cases even evaluate the methodology of, scientific articles from journals like *Nature*. Often students responded to this challenge by plagiarizing or patch-writing what the article said, a response well-predicted by research on plagiarism. Conversely, too low a bar keeps students from improving. The ideal learning situation tends to be challenging but scaffolded in such a way that students can navigate through it with the help provided by the scaffolding. One way to do this is to break up a challenging task into discrete steps. Our raters were impressed with the Social Action Project assignment created for one of the Women's Studies core courses (WS 2013). Students are asked to analyze a social problem and recommend a research-supported social action that might effect change, neither of which are easy. But the assignment has a common template, a form broken up into specific tasks and questions, and these walk students through the process of responding to the challenge.

Emphasize foundational criteria. It's difficult to explain something without first comprehending it. It's difficult to develop content that hasn't been sufficiently researched or analyzed. Which is to say, some of the criteria on our rubric may be more deserving of emphasis than others, simply because growth in those areas is likely to have trickle-out effects to other criteria. Comprehension is one such criterion for *Communication*. Evidence Analysis is one for *Critical Thinking*.

Build background knowledge. Research in educational psychology emphasizes the critical relationship between background knowledge and reading comprehension, critical thinking, and evaluation. What you already know determines to large extent what you are ready to understand. Background knowledge not only includes specialized terminology or statistical concepts but also easy-to-overlook elements like the organizational structure of a typical peer-reviewed scientific article. (Students without this knowledge often misinterpret the opening literature review as a thesis-bearing introduction and will report as findings what was meant to be historical background.)

Take advantage of the "teaching effect" to build student background knowledge. Most faculty have experienced the phenomenon in which, by teaching a subject, they learn it better than they ever would have understood it if they had spent that same time continuing to study as a student. Students experience this, too. By giving students more opportunities to explain content, faculty can take advantage of this effect. One powerful method for

encouraging student explanations is Writing to Learn: short, informal written tasks, performed in-class or in preparation for class, which instead of being graded or commented on are instead, more often, used during group or class activities and perhaps recorded as credit/no-credit. (Writing to Learn combines powerfully with Team-Based Learning in-class activities.)

Make assignment expectations clear in written instructions. Even if expectations are transmitted orally, they should also be communicated in writing for reference. Assignments for which such information was scant often had weaker student performances.

Volunteer to rate artifacts. Many of the above observations stem from discussions that bloomed during rating sessions. Faculty participants often came away from their rating experiences with new ideas for assignments or plans to revise assignments. It is one thing to see how your own students react to your own course, and quite another to see how many students respond to many different kinds of requests. You get a sense of what all students seem to struggle with, and of what kinds of work students are capable of when they're challenged but have the right kind of scaffolding.

PARTICIPANTS

The subsections below shed light on the range of participants, in terms of assessed students, submitting faculty, and core-academy raters.

STUDENTS

For AY 2016-17, students to assess were selected by Institutional Research and Data Management through a stratified random sample of face-to-face students in main-campus core curriculum courses, with the sample sizes calculated so as to produce a margin of error of 5%.

- Female: 89.14%, Male: 10.86%
- FTIC: 70.05%, Transfer: 29.95%
- Full-Time: 88.02%, Part-Time: 11.98%

Student Classification	Percentage
First-Year	33.98%
Sophomore	31.93%
Junior	20.96%
Senior	10.52%
Post-baccalaureate	2.61%
Grand Total	**100.00%**

Student Ethnicity	Percentage
American Indian or Alaska Native, non-Hispanic	1.57%
Asian, non-Hispanic	10.00%
Black, non-Hispanic	21.13%
Hawaiian/Pacific Islander, non-Hispanic	0.19%
Hispanic/Latino	31.49%
International	0.72%
Unknown	0.36%

White, non-Hispanic	34.54%
Grand Total	**100.00%**

Student College	Percentage
Arts and Sciences	30.72%
General	1.61%
Health Sciences	26.18%
Nursing	34.86%
Professional Education	6.63%
Grand Total	**100.00%**

PARTICIPATING FACULTY

Core faculty tend to come from the College of Arts and Sciences. Of faculty teaching the core during the academic year in question, 67.49% held doctoral degrees or equivalents. The remainder of core faculty comprise mostly adjunct faculty and (particularly for first-year composition) graduate teaching assistants.

Faculty Department	Percentage
Biology	39.64%
Chemistry and Physics	18.21%
Dance	3.13%
English, Speech, and Foreign Language	9.59%
Mathematics and Computer Science	14.19%
Music and Drama	2.69%
Psychology and Philosophy	6.20%
Sociology and Social Work	1.83%
Visual Arts	3.59%
Women's Studies	0.93%
Grand Total	**100.00%**

CORE-ACADEMY RATERS

Our volunteer rater pool comprised 23.66% full-time faculty, 42.26% staff, and 21.76% graduate students, with the remainder filled out by a combination of adjunct faculty, administrators, and alumni.

Raters	Percentage
Adjunct	3.25%
Admin	1.84%
Faculty	56.23%
Staff	38.68%
Grand Total	**100.00%**

TABLES OF RESULTS

Rates of success generally increased as students progressed through grade ranks, from first-year to junior, before dipping slightly at the senior level.

RESULTS BY STUDENT CLASSIFICATION

CORE OBJECTIVE	MEETS STANDARD	
Student Start Term	No	Yes
Empirical/Quantitative	**32.37%**	**67.63%**
FR	35.22%	64.78%
SO	31.37%	68.63%
JR	29.49%	70.51%
SR	32.12%	67.88%
Teamwork	**14.49%**	**85.51%**
FR	20.14%	79.86%
SO	10.03%	89.97%
JR	10.90%	89.10%
SR	12.50%	87.50%
Grand Total	**23.93%**	**76.07%**

RESULTS BY FULL-TIME OR PART-TIME STATUS

Objective	MEETS STANDARD	
Class Load	No	Yes
Empirical/Quantitative	**32.00%**	**68.00%**
Full time	33.07%	66.93%
Part time	22.98%	77.02%
Teamwork	**14.61%**	**85.39%**
Full time	14.56%	85.44%
Part time	15.02%	84.98%
Grand Total	**23.83%**	**76.17%**

RESULTS BY FIRST-TIME IN COLLEGE OR TRANSFER STATUS

Objective	MEETS STANDARD	
Admission Status	No	Yes
Empirical/Quantitative	**32.00%**	**68.00%**
FTIC	33.52%	66.48%
Transfer	28.65%	71.35%
Teamwork	**14.61%**	**85.39%**
FTIC	15.01%	84.99%
Transfer	13.42%	86.58%
Grand Total	**23.83%**	**76.17%**

RESULTS BY CRITERION

PERCENTAGE OF STUDENTS MEETING STANDARD BY CRITERION

Objective	MEETS STANDARD	
Criteria	**No**	**Yes**
Empirical/Quantitative	**32.00%**	**68.00%**
Application / Analysis	30.81%	69.19%
Assumptions	50.82%	49.18%
Calculation	22.93%	77.07%
Data Interpretation	40.25%	59.75%
Data Representation	23.71%	76.29%
Define Problem	35.06%	64.94%
Evaluate Outcomes of Attempted Solutions	26.76%	73.24%
Evaluate Potential Solutions	27.36%	72.64%
Evidence Analysis	23.58%	76.42%
Propose Solutions/Hypotheses	50.31%	49.69%
Research Design	63.04%	36.96%
Textual Analysis	19.57%	80.43%
Teamwork	**14.61%**	**85.39%**
Apply Criteria through Peer Review	39.80%	60.20%
Clarity of Peer Review	34.88%	65.12%
Constructive Framing of Peer Review	38.15%	61.85%
Contributes to Team Meetings	8.57%	91.43%
Contribution to a Cohesive Team Thesis	1.79%	98.21%
Cultural self-awareness	26.67%	73.33%
Empathy	12.82%	87.18%
Facilitates the Contributions of Team Members	6.23%	93.77%
Follows Directions of Conductor, Captain, or Director	7.27%	92.73%
Fosters Constructive Team Climate	6.39%	93.61%
Handles or Sets-Up Shared Property	2.50%	97.50%
Individual Contributions Outside of Team Meetings	10.23%	89.77%
Knowledge of cultural worldview frameworks	42.31%	57.69%
Limitations and Implications	36.84%	63.16%
Perspective Taking	4.76%	95.24%
Responds to Conflict	8.25%	91.75%
Responds to Director Feedback	8.70%	91.30%
Stage of Group Development	0.00%	100.00%
Supports Team When Not Speaking	14.29%	85.71%
Transitions from and to Teammates	18.18%	81.82%
Grand Total	**23.83%**	**76.17%**

FREQUENCY OF CRITERIA SELECTION BY PARTICIPATING FACULTY	
Objective	
Criteria	**Number of Ratings**
Empirical/Quantitative	**4,035**
Application / Analysis	647
Assumptions	140
Calculation	623
Data Interpretation	692
Data Representation	120
Define Problem	208
Evaluate Outcomes of Attempted Solutions	326
Evaluate Potential Solutions	426
Evidence Analysis	448
Propose Solutions/Hypotheses	267
Research Design	51
Textual Analysis	87
Teamwork	**4,332**
Apply Criteria through Peer Review	333
Clarity of Peer Review	289
Constructive Framing of Peer Review	269
Contributes to Team Meetings	697
Contribution to a Cohesive Team Thesis	142
Cultural self-awareness	26
Empathy	113
Facilitates the Contributions of Team Members	550
Follows Directions of Conductor, Captain, or Director	101
Fosters Constructive Team Climate	668
Handles or Sets-Up Shared Property	60
Individual Contributions Outside of Team Meetings	137
Knowledge of cultural worldview frameworks	56
Limitations and Implications	38
Perspective Taking	33
Recognizing Areas of Agreement and Disagreement	20
Responds to Conflict	536
Responds to Director Feedback	70
Stage of Group Development	66
Supports Team When Not Speaking	70
Transitions from and to Teammates	58
Grand Total	**8367**

Items above that appear in red are being considered for removal. Although we started by casting a wide net, paring down criteria is ultimately good both for rater reliability and for instructional focus. Items in red stood out, often for being seldom selected relative to other criteria. They may have other issues, including reliability, faculty confusion resulting in artifacts that only rarely could be rated, or overlap with other criteria.

RESULTS BY COLLEGE AND COMPONENT AREA

PERCENTAGE OF STUDENTS MEETING CRITERION FOR SUCCESS, BY COLLEGE		
CORE OBJECTIVE	**MEETS STANDARD**	
College	**No**	**Yes**
Empirical/Quantitative	**32.06%**	**67.94%**
Arts and Sciences	37.70%	62.30%
Health Sciences	31.29%	68.71%
Nursing	26.69%	73.31%
Professional Education	32.76%	67.24%
Teamwork	**14.57%**	**85.43%**
Arts and Sciences	16.85%	83.15%
Health Sciences	14.04%	85.96%
Nursing	12.37%	87.63%
Professional Education	17.32%	82.68%
Grand Total	**23.80%**	**76.20%**

PERCENTAGE OF STUDENTS MEETING CRITERION FOR SUCCESS, BY FOUNDATIONAL COMPONENT AREA OF THE CORE CURRICULUM		
CORE OBJECTIVE	**MEETS STANDARD**	
Foundational Component Area	**No**	**Yes**
Empirical/Quantitative	**32.00%**	**68.00%**
Life & Physical Sciences	21.99%	78.01%
Mathematics	39.81%	60.19%
Social & Behavioral Sciences	39.72%	60.28%
Teamwork	**14.61%**	**85.39%**
Communications	37.66%	62.34%
Creative Arts	9.57%	90.43%
Life & Physical Sciences	7.76%	92.24%
Grand Total	**23.83%**	**76.17%**

CONTACT INFORMATION

For more information about core assessment results, consult on assignment design for assessments, or learn more about joining our volunteer community of raters, Core Rater Academy, please contact Dr. Gray Scott, assistant professor of English and assistant director of academic assessment, at grayscott@twu.edu or (940) 898-2327.