

Study Profile: STAAR Physics – ACT Science (★★★★☆)

The STAAR physics – ACT science external validity study is designed to establish empirical links between performance on the STAAR physics assessment and performance on the ACT science test.

Motivation (★★★★☆)

This analysis was based on a single group of students who took both the STAAR physics and the ACT science assessments in 2010 or 2011. Data from STAAR derive from low-stakes operational administrations between 2010 and 2011 and are linked to motivated ACT science scores in corresponding years.

Representativeness (★★★★☆) and Sample Size (★★★★★)

Grade Levels

All Physics Examinees Versus Those Linked to ACT Scores

Group	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12	Missing	Total
All Physics	118 0%	5,944 3%			48,851 25%		195,016
Linked	2 0%	140 0%			14,938 41%		36,634

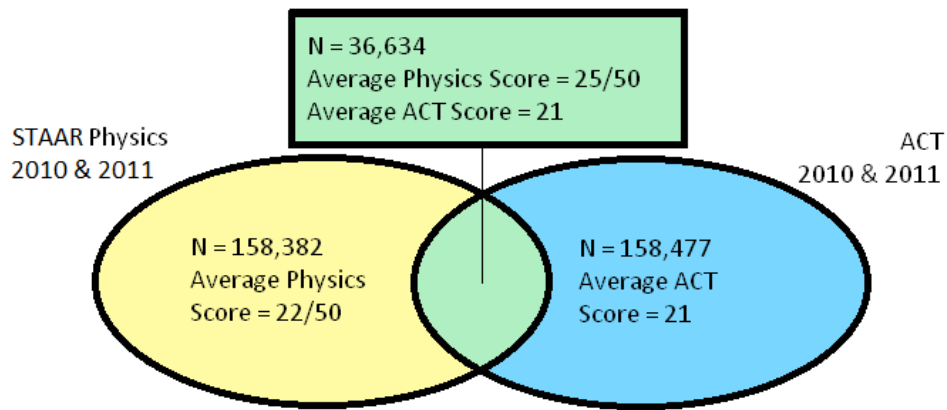
Demographic Characteristics

All Physics Examinees Versus Those Linked to ACT Scores

Group	Female	Economically Disadvantaged	African American	Hispanic	White	Other
All Physics	97,973 50%	81,512 42%	21,369 11%	79,923 41%	77,858 40%	15,866 8%
Linked	19,906 54%	12,682 35%	4,304 12%	12,072 33%	17,398 47%	2,860 8%

Summary of STAAR Physics and ACT Achievement

Linked and Unlinked Groups



Average ACT Scores Based on Students' STAAR Performance

Satisfactory Academic Performance	Advanced Academic Performance
24	27

Correlation (★★★★☆)

Correlation between STAAR physics and ACT science = **0.64**

Content Overlap (★★☆☆☆)

There is minimal (5%) content/skills overlap between the STAAR physics assessment and the ACT science assessment.

Assessment Characteristics

Assessment Characteristic	STAAR Physics	ACT science
Purpose	Created to determine mastery of the physics Texas Essential Knowledge and Skills (TEKS), the state-mandated curriculum	Designed to help college admissions officials identify students likely to achieve success in general science courses.
Assessment Type	A criterion-referenced assessment	A criterion-referenced assessment
Content	Measures force and motion; gravitational, electrical, magnetic, and nuclear forces; momentum and energy; and waves and quantum phenomena. Scientific process skills are incorporated into at least 40% of the test items.	The science component of the ACT is designed to assess process skills involving interpretation, analysis, evaluation, reasoning, and problem-solving in the context of biology, chemistry, physics, geology, astronomy, meteorology.
Item Format	50 items total: 45 multiple choice and 5 gridded response items	40 multiple-choice items total
Administration	<ul style="list-style-type: none"> • Administered in May, July, and December • Administered by school personnel • Administered online and on paper • Four-hour time limit 	<ul style="list-style-type: none"> • Administered in February, April, June, September, October and December • Administered on paper • Administered by trained supervisors and proctors at an approved location (typically a local school with school district staff administering the test) • 35 minute time limit
Performance Standards	Performance standards established and implemented in spring 2012	<ul style="list-style-type: none"> • Score scale is 1–36 • Average score is 21 • College readiness benchmark score is 24