

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

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

Motivation (★★★★☆)

This analysis was based on a single group of students who took both the STAAR biology and the ACT science assessments between 2009 and 2011. Data from STAAR derive from low-stakes operational administrations between 2009 and 2011 and are linked to motivated ACT science scores in corresponding years.

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

Grade Levels

All Biology Examinees Versus Those Linked to ACT Scores

Group	Grade 8		Grade 9		Grade 10		Grade 11		Grade 12		Missing		Total
All Biology	1,225	0%	263,171	78%	66,925	20%	5,096	2%	1,969	1%	14	0%	338,400
Linked	5	0%	4,290	44%	4,637	48%	480	5%	327	3%	0	0%	9,739

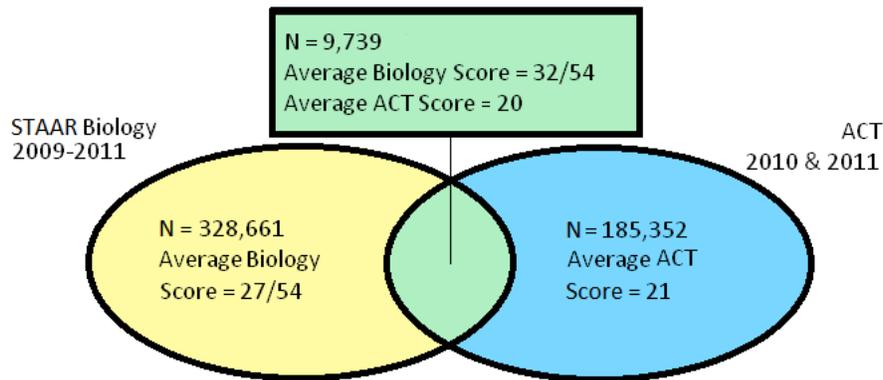
Demographic Characteristics

All Biology Examinees Versus Those Linked to ACT Scores

Group	Female		Economically Disadvantaged		African American		Hispanic		White		Other	
All Biology	167,493	49%	167,876	50%	44,072	13%	144,350	43%	128,124	38%	21,854	6%
Linked	5,333	55%	3,895	40%	1,185	12%	3,050	31%	4,533	47%	971	10%

Summary of STAAR Biology and ACT Achievement

Linked and Unlinked Groups



Average ACT Scores Based on Students' STAAR Performance

Satisfactory Academic Performance	Advanced Academic Performance
22	26

Correlation (★★★★☆)

Correlation between STAAR biology and ACT science = **0.66**

Content Overlap (★★☆☆☆)

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

Assessment Characteristics

Assessment Characteristic	STAAR Biology	ACT Science
Purpose	Created to determine mastery of the biology 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 cell structure and function, mechanisms of genetics, biological evolution and classification, biological processes and systems, and interdependence within environmental systems. At least 40% of the test questions will incorporate scientific process skills.	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, and meteorology.
Item Format	54 multiple choice items total	40 multiple-choice items total
Administration	<ul style="list-style-type: none"> • Administered in May, July, and December • Administered online and on paper • Administered by trained school personnel • 4 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 will be 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