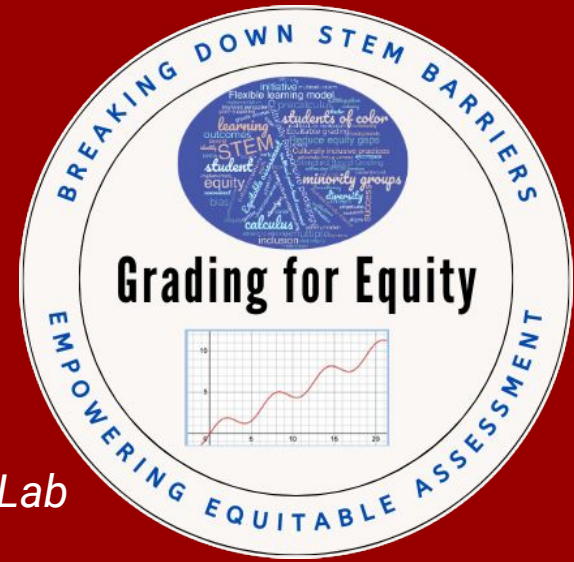


Grading for Growth with Active Learning

Supported with a grant from the California Education Learning Lab



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Learning Outcomes

- Gain an understanding of how active learning supports equitable outcomes.
- Explore ways that assessments can reinforce or break student-to-teacher trust.
- Adopt a grading system that aligns with your values.
- Begin to develop your own assessment plan.

Active Learning

WHAT and HOW we want students to learn



Take 45 seconds to look over the following list of pairs of words, but do not write anything down.

bread/b_tter

ocean/breeze

leaf/tree

music/l_rics

sweet/sour

sh_e/sock

phone/bo_k

movie/actress

chi_s/salsa

gasoline/engine

high school/college

pen_il/paper

river/b_at

turkey/stuffing

fruit/vegetable

be_r/wine

computer/chip

television/rad_o

l_nch/dinner

chair/couch

Directions: In the next minute...

- Without looking at the list of words, write down as many pairs of words as you can remember.
- You do not need to remember where any missing letters were nor which column a pair was in.

Measuring Recall

How many of your
pairs of words are in
Column A?
In Column B?

A	B
ocean/breeze	bread/b_tter
leaf/tree	music/l_rics
sweet/sour	sh_e/sock
movie/actress	phone/bo_k
gasoline/engine	chi_s/salsa
high school/college	pen_il/paper
turkey/stuffing	river/b_at
fruit/vegetable	be_r/wine
computer/chip	television/rad_o
chair/couch	l_nch/dinner

Table: Word list from **The Talent Code**.

How many words did you remember in each column?

More in Column A?

More in Column B?

The same?

Get ready to scan...

slido



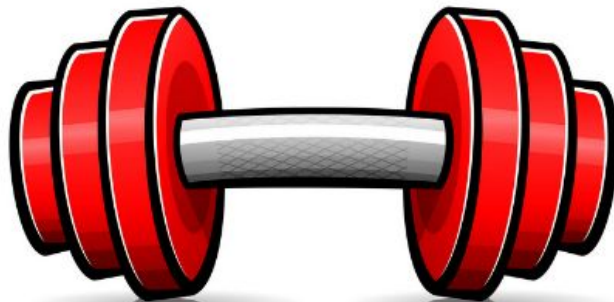
How many words did you remember in each column?

① Click **Present with Slido** or install our [Chrome extension](#) to activate this poll while presenting.

Why?

Studies show that on average people remember 3 times as many pairs in column B, the one with missing letters. (From The Talent Code)

No pain,
no gain!



Struggle is like
weight lifting for
the brain.

Studies show that on average people remember 3 times as many pairs in column B, the one with missing letters. (From The Talent Code)

Why?

When you saw the words with blanks,

- You stopped, you stumbled, even if it was only for a moment,
- Then, you made an effort to figure it out.
- This made it more likely for you to remember these words.

Struggling & Growing = Active Learning

“Compared to traditional lecture alone, use of active learning approaches has been shown to increase student performance and decrease failure rates, particularly for students from underrepresented and excluded communities”

(Eddy & Hogan, 2014; Haak et al., 2011; Theobald et al., 2020).



Active Learning

Before class

During class

After class

Text: “**Active Calculus**” by Matt Boelkins.

- Preview activity
- Mini lectures
- Community building
- Team investigations
- Check for understanding
- Student presentations
- Assessments
- My Open Math Quizzes *for Active Calculus*
 - instant feedback, multiple attempts, help
- Video Lectures



Active Learning

Within Standards Based Grading

We work through 25 Learning Standards.

- 2 are “prerequisite” skills
- 20 are STEM Calculus content.
- 3 are “Success In STEM, covering soft skills



These standards encompass all the skills that we believe are important for students to take from our course & they form the basis of our grading system.

Assign value to “soft skills”



- **“Utilizing Resources Effectively”** - Learn to check your grade, manage your time, come to office hours or visit the tutoring center X times, use campus resources and services.
- **“Reflection and Metacognition”** - Complete Canvas readings and discussions on metacognition with topics such as Imposter Syndrome, Self-Care, Microaggressions, How to become an Independent Learner,....
- **“Effective Failure”** - Re-attempting or correcting 5 Learning Standards from in-class exams.



Create a safe space where it's OK to be vulnerable.



- **Teams as a Support System**



- 1st day ice-breakers.
- Set class norms.
- Aware of group dynamics, “step in/step out”.

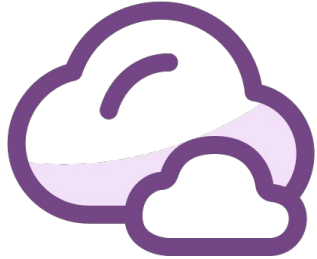
- **Importance of Productive Struggle**

- Slow down, struggle, make errors, learn from them and try again.
- The “sweet spot” for learning is at the edge of their capabilities.
- Learning takes a long time.

Grading for Equity

Grading to match our values

slido



What is the purpose of grades, anyway?

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A Brief History of Assessment Practices

- 1600s Harvard used an oral exit interview to award a degree
- 1832 Yale started to use a 4 point scale to rank students –without disclosing to students to “thwart unhealthy competition”
- 1898 Women were invited to higher education at Mt Holyoke and the modern grading system as a sorting mechanism was born

A Brief History of Assessment Practices

- 1994 The Bell Curve published to “explain” variations in intelligence
- 1994 Hernstein & Murray suggest the bell curve:
 - There is no basis for “average” learning from cognitive science
 - 100 years of sorting led to a misapplication of the bell curve
 - only reflects pre-existing inequities in society
 - supports racialized beliefs about outcomes in grading systems
 - supports a fixed mindset

What did this
history and
praxis
accomplish?

Assessment approaches and processes can help reinforce a sense of belonging or add to students' belief that they do not belong because their learning or experiences are not deemed as valid or important.



Goodhart's Law

“When a metric becomes an objective, it ceases to be a good metric.”

GOODHART'S LAW

WHEN A MEASURE BECOMES A TARGET,
IT CEASES TO BE A GOOD MEASURE

IF YOU
MEASURE
PEOPLE ON...

NUMBER OF
NAILS MADE

WEIGHT OF
NAILS MADE

THEN YOU
MIGHT GET

1000'S OF
TINY NAILS

A FEW GIANT,
HEAVY NAILS



sketchplanations

Trust & Equity

Trust is fostered by

- Assessment practices that demonstrate we believe 100% of our students can learn.
- No Standards Based Grading with multiple opportunities for Reassessments
 - Reducing student anxieties and fears.
- Opportunities for students to build their skills as students.
- Demystify grading and assignment expectations.
- Communicating that you are there for them as a partner in their learning.

Culturally Responsive Assessments

“The culturally relevant component involves assuring that the assessment process—**beginning with student learning outcomes statements and ending with improvements in student learning** – is mindful of student differences and employs assessment methods appropriate for different student groups.”

[National Institute for Learning Outcomes Assessments](#)

Equity Minded Assessment Checklist

National Institute for Learning Outcomes Assessment

Provides a call for culturally responsive assessment practices Montenegro, E., & Jankowski, N. A. (January 2020)

1. **Check biases through process to address positions of privilege.** Instead of questions that require "common knowledge" exams and
2. **Use multiple sources of evidence and assess in-class timed tests being assessed effort.** Instead of only in-class timed tests
3. Include student perspectives and take action based on peer reviews. exams
4. **Increase transparency in assessment results and actions taken.** Standards Based Grading
5. Ensure collected data can be meaningfully disaggregated and interrogated.
6. **Make evidence-based changes that address issues of equity.** SBG is a journey, not a destination. text-specific.

Standards Based Grading

Many flavors with a common goal



Traditional Grading: But I've always done it this way, so what's the big deal?

Consider the following grading scenario.

	Exam 1	Exam 2	Exam 3	Final Grade
Student A	95	80	65	80%
Student B	80	80	80	80%
Student C	65	80	95	80%

Which student learned the most, during this course?

slido

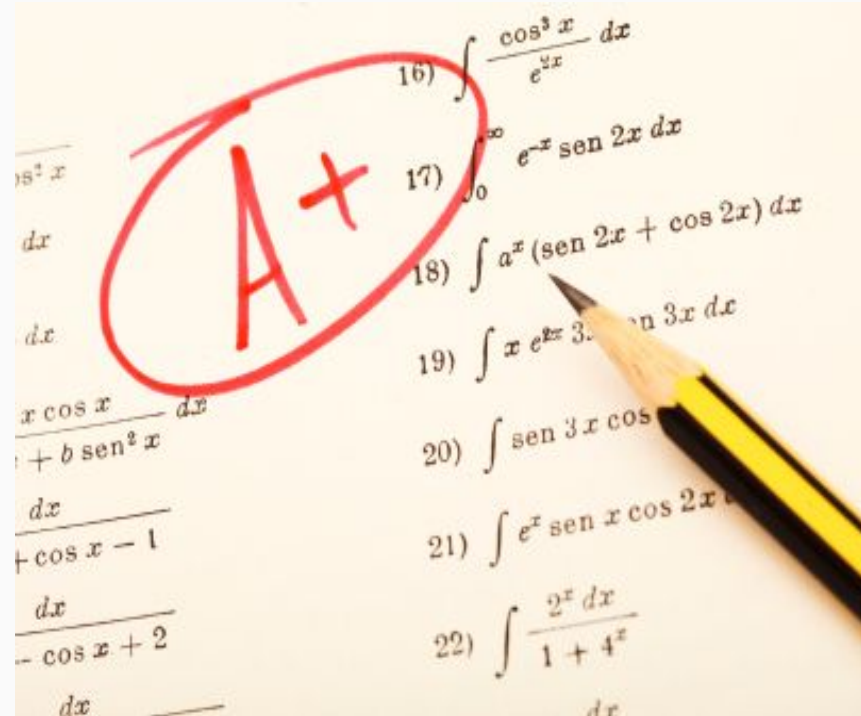


Which student learned the most?

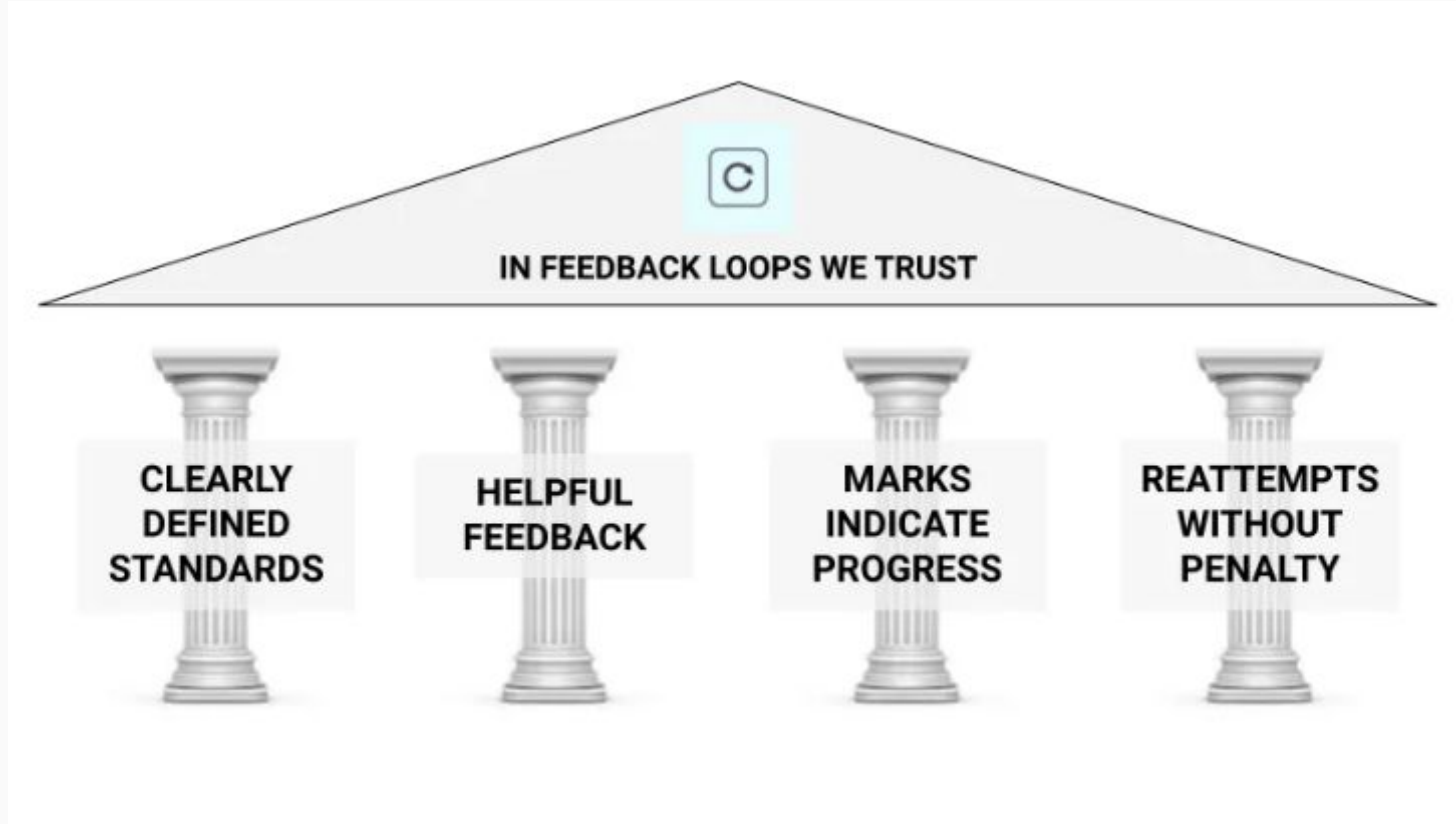
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What is the goal of grading?

- Exam scores and grades are an *objective* for students, meaning they have lost their value as a metric
- Students hacking, mimicking the teacher, and shortcutting the learning process comes at the expense of deeper learning
- “When a metric becomes an objective, it ceases to be a good metric.”



What is Standards Based Grading?



Standards Based Grading (SBG) Basics

There are many different ways to implement SBG, but they all have some things in common.

- A set of clearly defined standards
 - Assessments focus on the standards.
 - Students know which standards are being assessed.
- Instructor feedback focuses on helping the student improve knowledge of the standards.
- A system for allowing students to reattempt any standard, multiple times.
- No penalty for making and correcting mistakes.
Learning X is more important than when you learn it.
- Grades indicate progress toward meeting the standard (not averaging in earlier attempts)

How To...

The nuts and bolts

Transition to SBG

It doesn't have to be



If you're not ready to dive in...

...try dipping in a toe?



- Choose a few “Core Learning Targets” for your class.
- Decide how and when to assess them.
- Decide how the Core LTs fit into your grading scheme?
- How and how many times will these LTs be reassessed?

Writing Standards (aka Outcomes or Targets)

For an upcoming course, choose one topic/skill that you value highly.

- “If you learn nothing else from my class, I hope that you learn....”
 - Take one of the SLOs as a starting point
 - What knowledge/skill did you want students to demonstrate on past finals?
- Write a Learning Target for this skill, starting with “I can...”
- Try to be as specific as possible about the skills you expect students to demonstrate and what work you will expect as evidence.

Example LT: “I can find the derivative of a function, both at a point and as a function, using the definition of the derivative.”

Assessment

Write one assessment to assess the standard.

- Recall the skills that you want students to demonstrate.
- Your question should require students to demonstrate those skills
- Be explicit about what you expect (consider writing a rubric).

Example LT: “I can find the derivative of a function, both at a point and as a function, using the definition of the derivative.”

Example Test Question:

1. Given the function $f(x)=1/x$ use the limit definition of the derivative to calculate $f'(x)$.
2. Given the function $f(x)=x^2-4$, use the limit definition of the derivative to find $f'(2)$.

Directions include the necessity to use the “limit definition.”

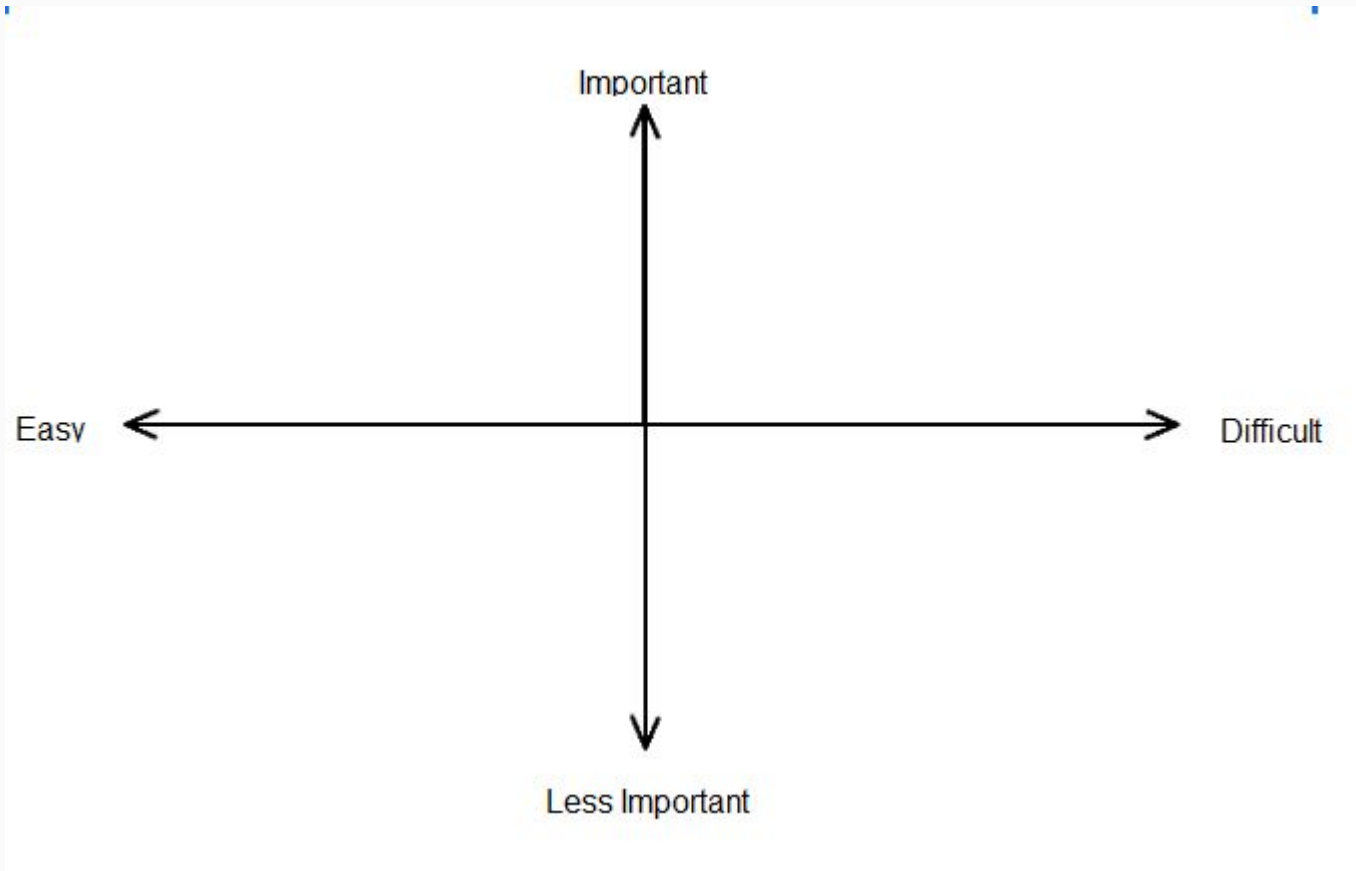
Rubric Sample

Student Friendly Language



- **Proficient Level:** Shows fluency and expertise with the outcome. "I can do it on my own without help and I am able to explain my thinking."
- **Apprentice Level:** Shows good progress toward learning the outcome. "I understand the main idea and with some reflection I can correct my mistake(s) to resubmit."
 - *Please turn in complete solutions on a separate sheet of paper by the next class meeting and be prepared to explain your mistake in an "interview" or a retake of the same problem.*
- **Novice Level:** Beginning level work. "I don't fully understand what I need to do. I need help and practice with the outcome. I will revisit the connected assignments."
 - *Seek help, practice more and wait for another reassessment (different problem) opportunity.*

Classification of learning outcomes.



Decisions...

for each outcome decide

Timed test

Single assessment

All at once

Summative assessment



At-home assignment

Multiple assessments

In scaffolded steps

Formative assessment

Make an assessment plan. How will you...

- Assess the Standard.
 - HW Assignment
 - Essay
 - Quiz
 - Exam
 - Other??
 - Some combination of multiple ways.
- Grade the standard
 - Met / Not met
 - Gradations
- Allow for reassessments without penalty
 - During normal exam times?
 - During office hours?
 - What is the most equitable approach to reassessment?

Finally, you will need to incorporate the standards into your course syllabus.

For students to take a standard seriously, you must assign value to it.

- If converting fully to SBG, are all standards equal? Do some standards have more “weight” than others? Will all standards be assessed in the same ways?
- If using points based grading, how many points?
 - Example: Barb decided to use the 3 course SLOs as her “core standards.” These are worth 15% of the course grade (5% each). Since these standards are also covered on exams, if a student has not completed a standard by the time of an exam, she uses performance on the exam to assess successful completion of a standard.

Our Data

What are we learning from our data so far?

- Our data show
 - improvement in GPA for all groups from previous years
 - reduction in the success gap between groups
 - some mixed results for our targeted populations - we are trying to understand better with new data coming in.

SBG Data Analysis (Calculus I Canvas Data) diligence, performance and resilience.

Questions of interest (Canvas data for Calculus I students at CSUMB):

1. Do students attempt a standard as soon as possible? (diligence)
2. Do students meet a standard at the first attempt? (performance)
3. If students do not meet a standard at the first attempt, do they eventually meet? (resilience)
4. Do students meet a standard by the end of semester regardless of the number of attempts?

Final Thoughts / Takeaways

1. Active Learning is a strong framework upon which to build your alternative grading system.
2. Metacognitive activities help to lay the foundation upon which the whole structure is built. Help students build soft skills!
3. Support for students throughout the process is essential.
 - Teamwork!! Having the support of classmates helps students build trust in themselves, each other and the educational system.
 - Faculty also need support, for many of the same reasons.
4. There are many varieties of SBG to choose from and you don't have to pick just one. Design your own version! Our team is continually learning and revising, just like our students.



Questions



Thank you for your time!

Please reach out to us for any questions

Jennifer Moorhouse at jmoorhouse@hartnell.edu

Senorina Vazquez at svazquez@hartnell.edu

More examples

For more grading examples, literature and information, see Rachel Weir's page.

- [Alternative Grading Methods \(rachelweir314.blogspot.com\)](http://rachelweir314.blogspot.com)

And Robert Talbert's blog

- [Robert Talbert, Ph.D. \(rtalbert.org\)](http://rtalbert.org)

And repositories of alternative grading materials.

- [Alternative Grading Materials for Mathematics Courses - Google Drive](#)
- [Mastery Grading Materials for Physics & Astronomy Courses - Google Drive](#)

Shared Goodies



Canvas courses: Hartnell College [Canvas course for Calculus I](#)

CSUMB: [Canvas Course for Calculus I](#), [Canvas Course for Precalculus](#)

Syllabi: Hartnell Calculus I [Syllabus](#) (an [editable version of the syllabus](#) - please make your own copy first!) [CSUMB Calculus I Syllabus](#) and [CSUMB Precalculus Syllabus](#)

Learning Targets: [Hartnell Calculus I learning outcomes](#)

[CSUMB Calculus I learning targets](#) and [CSUMB Precalculus Learning targets](#)

Assessments - Reach out to Lipika at ldeka@csumb.edu or

Jennifer at jmoorhouse@hartnell.edu

Works Cited

Montenegro, E., & Jankowski, N. A. (2020, January). A new decade for assessment: Embedding equity into assessment praxis (Occasional Paper No. 42). Urbana, IL: University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment (NILOA).

Herrnstein, R. J., & Murray, C. A. (1994). The bell curve: Intelligence and class structure in American life. Free Press.

Long Beach City College [Cultural Curriculum Audit](#)

ESCALA Educational Services, [CTL-HSI course](#)

Grading for Growth,

The Talent Code

Grading for Equity

SBG Results for Calculus I

(Summary - results combined with CSUMB)

- Male students have a higher success rate on the first attempt at a standard than females.
- *When compared to Fall 23, the re-attempt success rate was higher in Spring 24, and the overall rate of meeting a standard is significantly higher in Spring 24.*
- *Earlier LTs were attempted and met more than standards that appeared later in the course.*