

Students who fail and the professor who let them

Standards-based grading and student growth in general chemistry

General Chemistry I with Lab

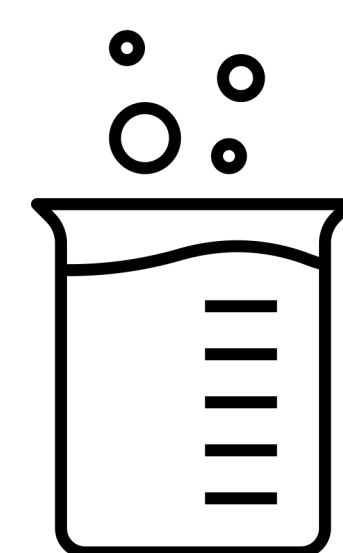
Lecture: Remote, once a week with additional pre-recorded videos

Lab: In person, once a week

Bunker Hill Community College

66% Part-time students

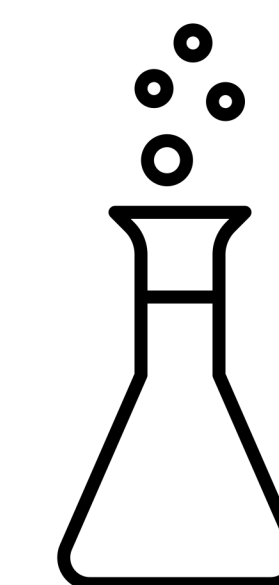
67% Students of Color



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Standards-based grading
allowed students to **recover** from setbacks and disruptions.

Course outcomes were related to **effort**, not test-taking ability or prior exposure to the material.

Standards Based Grading

Weekly Homework

- Submitted / Late / Not Complete (100 / 50 / 0).

Lab

- Pre-lab, Attendance, Post-lab questions
- Submitted / Late / Not Complete (100 / 50 / 0).

Learning Targets

- Core (11) and Supplemental (15)
- Assessed with a 2 to 5 question quiz
- Grouped into 4 exams
- Scored as “Meets Standard” or “Not Yet”
- Students can retake up to 3 LTs each week

Grades were determined using the following grading table.

Grade	Core LT	Suppl LT	HW	Lab
A	11	14	90	88
A -	11	13	85	88
B+	11	12	85	77
B	10	11	80	77
B -	10	10	75	77
C+	10	9	75	66
C	10	8	70	66
C -	10	7	65	66
D	9	5	60	66

Improvements for next time

Encourage fewer retakes by discouraging ‘blind’ first attempts

Recognize and address “magical thinking” early

Reach out to struggling students earlier

Report course grades multiple times throughout the semester

Questions to ponder

Why didn't students submit homework or retake learning targets?

What answers are “good enough” to meet a learning target?

How can this approach be scaled up in a larger classroom?

Why don't the final grades include any Cs?

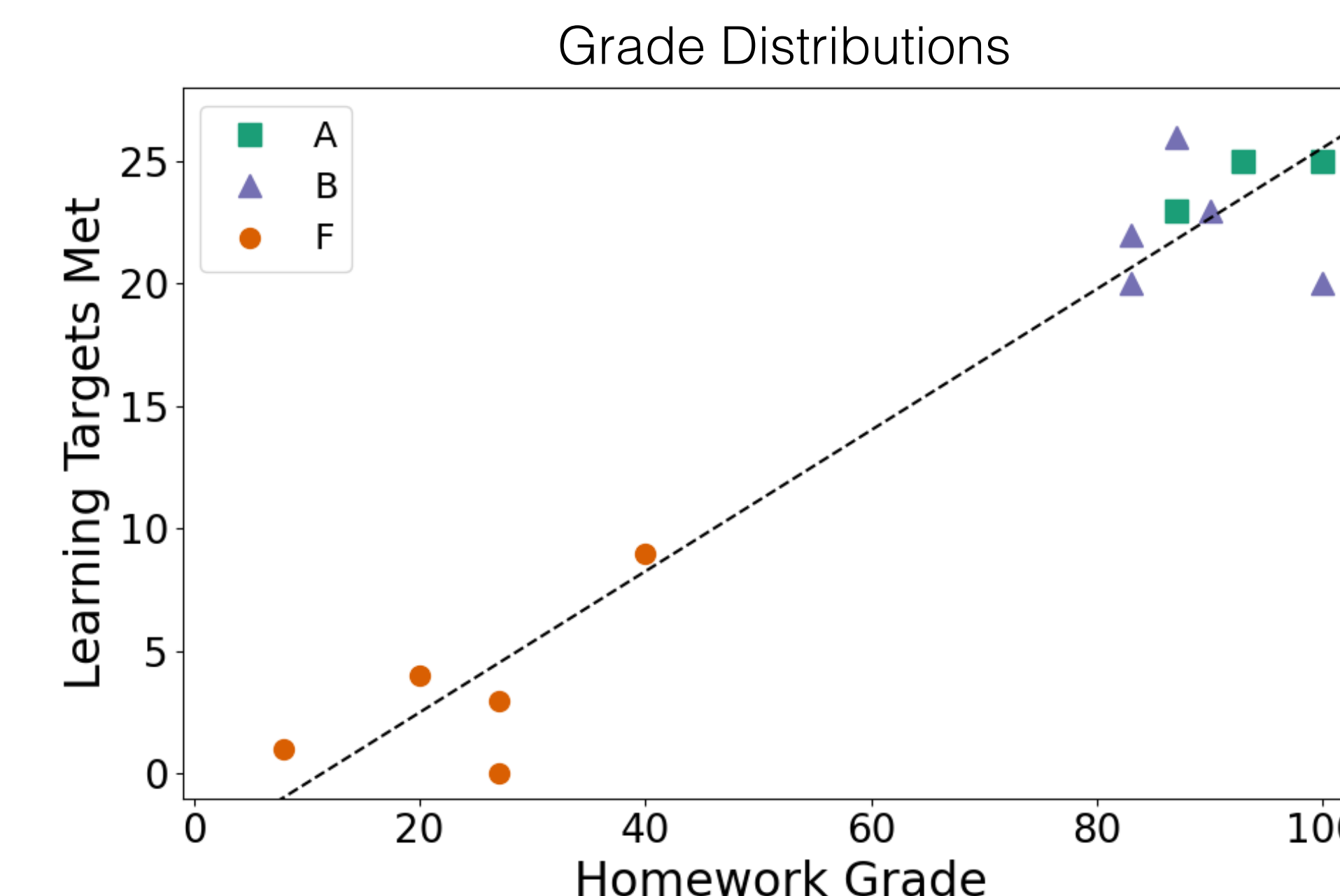


Figure 1: Final homework grades compared to the number of learning targets met for the 13 students who finished the course (5 students withdrew).

Engagement → Success

Effort and engagement appear to be a key component to student success. While many students did poorly on the first exam, those who consistently submitted homework assignments and completed learning target retakes were able to improve their grades and pass the course. Students who didn't engage with the material continued to do poorly in the course. This trend is clear when comparing homework grades (an indicator of student engagement) to the final number of learning targets met (Figure 1). Overall, standards-based grading allowed students who performed poorly on initial exams to catch up and demonstrate their learning over time (Figure 2).

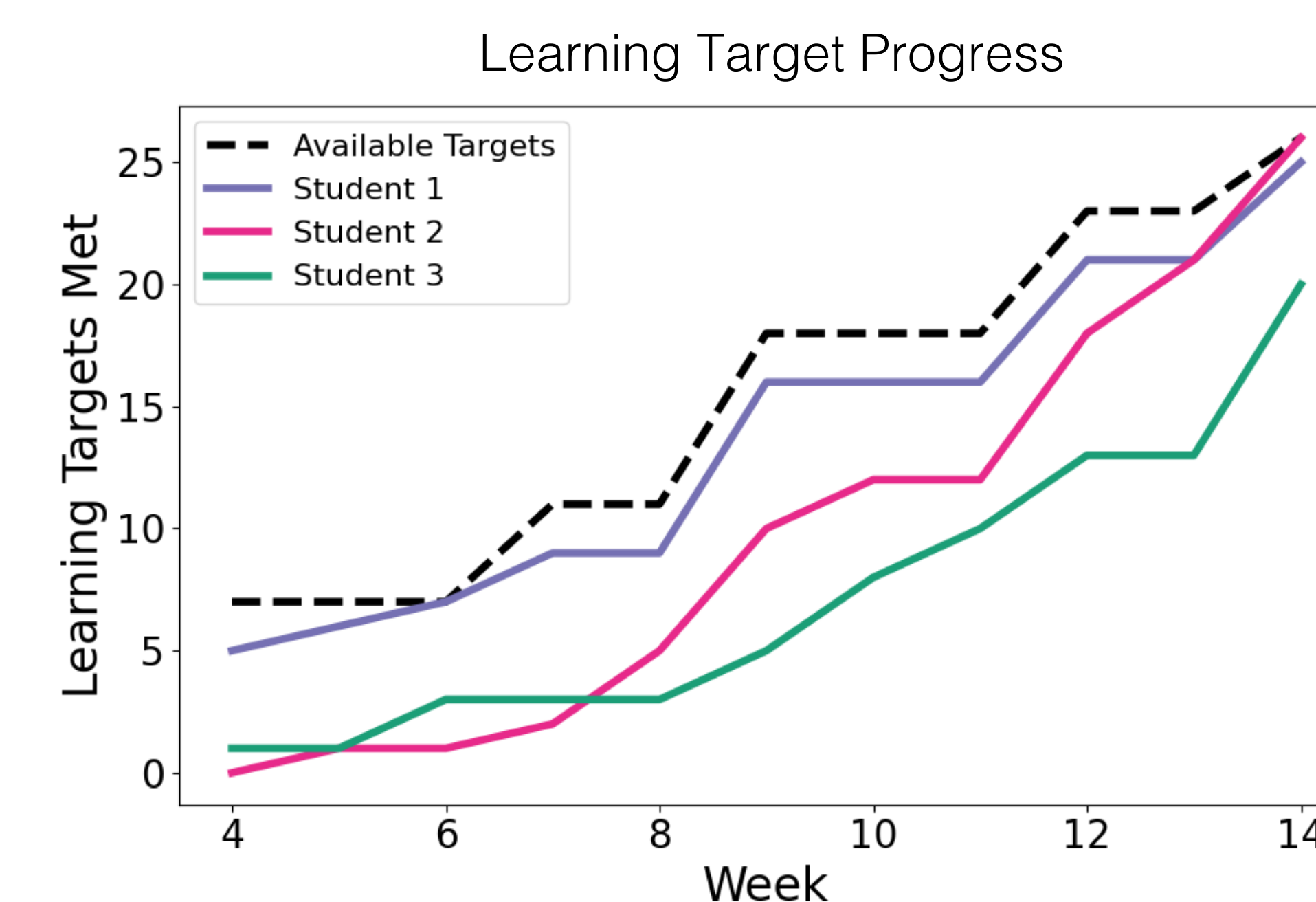


Figure 2: Learning target progress of three students showing various pathways towards success. The black dotted line shows the number of learning targets that were available during each week of the course.

Poster and syllabus:

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