Graphing Average, Number and Percentage

When charting and graphing progress, it is important to determine whether a class average, number of students, or percentage provides the best method to accurately reflect progress.

In a stable classroom, recording and graphing the number of students reaching mastery will work. A classroom with high student mobility, or attendance issues, should use the percentage of students mastering the work.

The following examples illustrate the difference between class average, number reaching mastery, and percentage of students reaching mastery. It will also show the difference between bar and line graphs.

Graphing the Number of Students that Reached the Class Goal

Class Goal: By the end of the semester, 100% of the students will score at least 80% or higher on the weekly vocabulary quizzes.

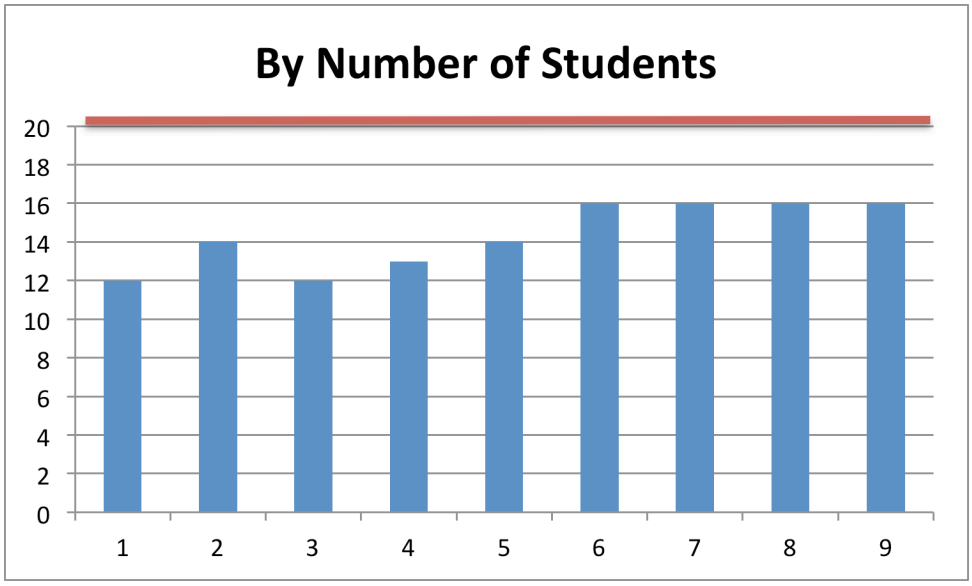
Week	# of Students	Mastery
1	20	12
2	20	14
3	19	12
4	18	13
5	18	14
6	20	16
7	18	16
8	19	16
9	18	16

In the graph that follows, the red control line is based on the 20 students that were enrolled and attended the first week. As noted in the table, the actual number of students enrolled or attending varied from 18 to 20.

Graphing the number of students reaching mastery each week, indicates that while progress has been made, the number of students reaching mastery has flat lined for four weeks.

Week	# of Students	Mastery
1	20	12
2	20	14

3	19	12
4	18	13
5	18	14
6	20	16
7	18	16
8	19	16
9	18	16



Graphing by Class Averages

Another common practice is to record and graph class averages. The following example illustrates the flaw in that practice.

Student	Week 1	2	3	4	5	6	7	8	9
1	80	82	80	84	90	92	X	92	88
2	82	80	90	88	84	88	90	88	
3	84	84	94	88	90	88	86	90	82
4	80	86	96	82	86	92	X	90	80
5	82	90	94	80	80	82	80	X	80
6	80	96	98	94	82	80	80	80	82
7	86	92	92	94	80	80	84	82	80
8	80	80	94	92	86	82	86	84	80
9	82	84	98	90	82	80	82	88	80
10	84	86	90	94	84	88	80	80	82

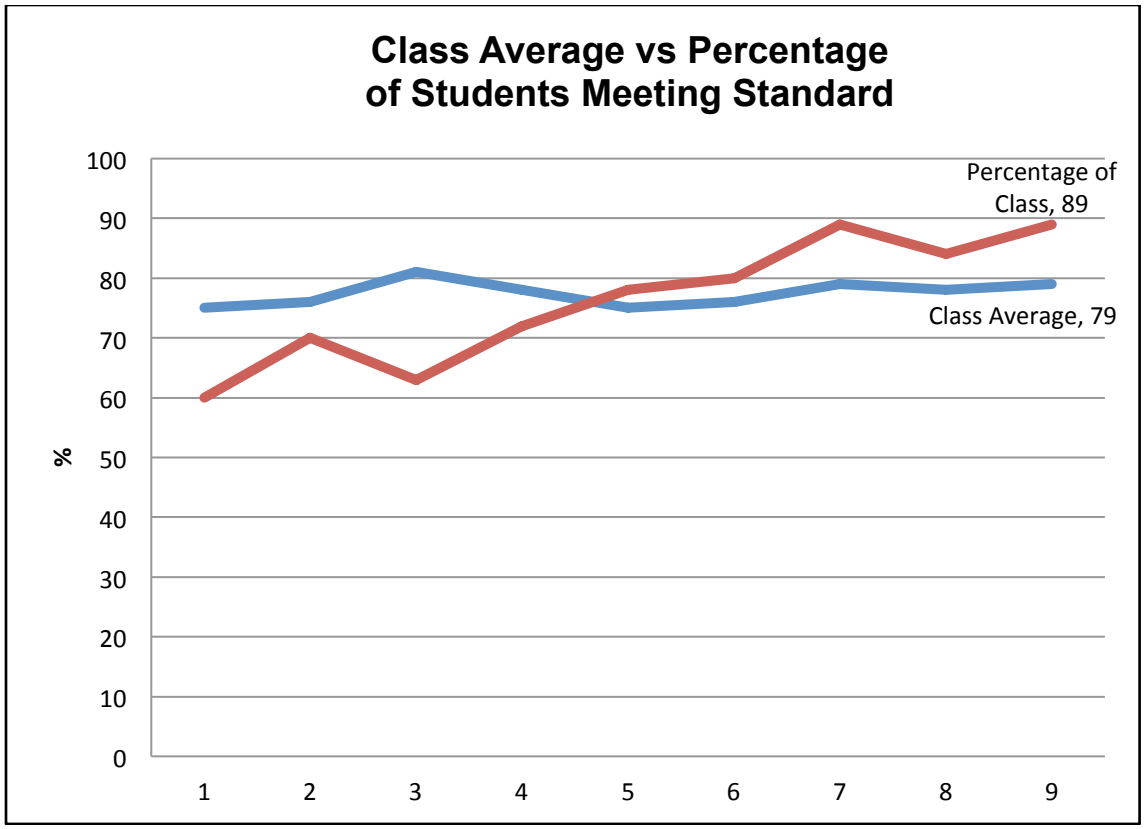
11	86	88	88	82	88	84	80	84	80
12	80	94	72	80	80	82	80	80	80
13	50	80	64	80	82	80	82	82	80
14	62	80	76	74	80	80	82	80	82
15	70	64	64	66	X	80	84	84	80
16	54	72	70	66	64	82	80	82	80
17	60	56	58	X	X	60	82	80	80
18	68	62	62	X	62	64	84	72	72
19	70	72	66	64	60	58	56	60	X
20	72	74	X	72	68	66	60	62	62
AVG	**74.60**	**80.10**	**81.37**	**81.67**	**79.33**	**79.40**	**78.88**	**78.67**	**79.44**

Comparison of Class Average vs. the percentage of students that have mastered the content

Week	Class Average	Percentage of Class
1	75	60
2	76	70
3	81	63
4	78	72
5	75	78
6	76	80
7	79	89
8	78	84
9	79	89

Graphing by Percentage of Students

Graphing the percentage of students that mastered the content each week shows that the percentage of students mastering the content has improved from 60% to 89%.



A few observations from an analysis of the data:

1. In Week 3 the average went up, but actual percentage of students meeting the standard decreased.
2. In Week 3 the average indicates that everyone had at least 80% (Mastery), but only 63% actually mastered the content.
3. In Week 4 the average decreased, but the percentage of students mastering the content increased,

Other considerations and factors that influence class average:

1. One specific child can heavily influence class average by scoring very poorly or being absent and not making up the test.
2. The class average is fairly consistent, but doesn't represent the real growth progress in the number of students mastering the content.
3. There is no correlation between the class average and the percentage of students meeting the standard.

Graphing by percentage is usually the best method of visually presenting and analyzing data. It eliminates the variables of absences, not making-up tests, poor performance by one or two students, or just lack of effort. While all of those variables can be addressed

for future tests or quizzes in a short conference with the student, the data usually cannot be adjusted.

