

Standards Based Grading in AP Calculus Classes

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Introduction: In the workplace, training is an ongoing process. Individuals learn skills at different paces and are expected to be aware of their abilities. Employees make decisions on how to improve their skills. Standards Based Grading (SBG) is a system that assesses students in a way that encourages this same self-reflection process. In using SBG, student performance is assessed on several different skills and individual feedback is given on each topic. By using this process for grading, students and teacher can gain a better understanding of what they know and what needs to be re-taught. I used standards based grading in two Advanced Placement calculus classes for an entire school year. Students were periodically asked about their experiences with the grade system and their self-awareness of their grades in class. This research was carried out to determine:

- To what extent does the use of Standards Based Grading change students' sense of ownership of their grades and learning?
- To what extent do standards based grades measure student's achievement in an AP Calculus class?

Research Findings: Student's AP exam scores were compared to their standards based grades, their self-awareness of those grades, and their self-assessment of their abilities.

- **Students were not aware of their grades in class or their abilities.** Many students never looked at their ratings on different standards, concerning themselves only with their overall letter grade. Out of the 20 students studied, only 5 were able to reliably predict their performance on a practice AP test.
- **Student's awareness of their SBG scores was not highly predictive of their results on the AP exam.** Some students who were unaware of their scores did very well on the test, others did poorly. The students who were most aware of their SBG grades did poorly on the exam. Overall there is moderate negative correlation ($r = -.59$).
- **The student's 4th quarter grades were most predictive of their AP Exam score.** A regression predicting students' AP scores showed that about 60% of the variability ($r^2 = .63$) in students' AP exam scores were explained by their in-class grades.

Implications for Future Teaching: The use of SBG did not lead to improved student awareness of their abilities and learning. This could be due to difficulties students had in accessing their scores on a regular basis, due to problems we encountered with the school's grading system. The standards based grades did, however strongly predict student performance on the AP Exam. When my school uses a grade keeping program that accommodates SBG, I will use it and recommend others do so. In the meantime, I will make sure that students are as aware as possible of what they are expected to know and how well they are meeting those expectations. It is my goal to give students all the tools possible to take ownership of their learning, be aware of their abilities and shortcomings, and take steps to improve their performance in class. These skills, taught in high school, should help them to succeed in the workplace and in other areas of life.