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What Do Students Really Know When They Enter College?

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Abstract

When students began to state that they had already done our introductory laboratories in high school, we studied what students really know when they enter college and what impact our laboratory exercises had on their understanding of biology. Students were given a multiple-choice test on the first day of the semester on facts we think they should know when they matriculated. We also tested them again one week after each specific laboratory exercise and again at the end of the each semester. We found that most student scores were usually less than 50% at the beginning. A post-test after the laboratory exercise yielded significant increases in scores, and while their scores dropped somewhat by the end of the semester, student scores were still significantly higher at the end of the semester. We also asked students about the proportion of overlap with their high school laboratory exercises and the degree of overlap was typically below 50%. When asked about the value of each exercise and whether it was a good learning experience, more than 70-80% of the students replied in the affirmative. However, one laboratory exercise did not fair well. This was mitosis and meiosis. In response to student criticisms of this exercise, we instituted another exercise that started with very little to no terminology to engage student thinking about meiosis and we will share that exercise at the conference.