How can we narrow the holes in the sieve?

BIO 201, Human Anatomy & Physiology 1, is a core requirement for many health care fields, most notably nursing, and is considered by many a ‘sieve’ class, in that it is a challenging class and a grade of a C or better is required to take BIO 202, so 201 often weeds out the students who are not ready. As a result, it is not uncommon for only 50-60% of the class to pass, making the holes in the sieve rather large. So why is this the case?

High school biology is the only prerequisite to enroll in BIO201 and it always seems that students who have taken a BIO 156 or 181 (or any other college science course) prior to 201 have performed better. To further evaluate this observation, an informal and confidential survey was developed and given to students on the first day of class to gather information about their previous biology experience, grades and career goals. Data was collected over three semesters (F2016-F2017) from three separate instructors.

A total of 203 responses were completed from 10 different sections of 201 that included student’s pervious biology experience, high school only, 156, 181 or other college science class and their self-reported grades in those classes and their subsequent performance in BIO 201.

To simplify this initial evaluation, student’s grades were converted into a pass/fail format to represent successful completion of 201. A grade of A, B or C was considered a passing grade and all other grades, D, F or W, were deemed failing grades as students will have to retake the course in order to enroll in BIO 202.

The passing rate for all students (those who received a C or better) was 120/203 or 59%, meaning 41% of students enrolled in 201 either failed or withdrew from the class by the end of the semester.

Of the 203 students, 68 reported having only a high school level biology background. Of these 68 students, 29 (42%) received a passing grade, meaning 58% failed to complete the class. This is well above the 41% average for the entire course.

91 (67%) of the remaining 135 students who reported taking a previous college level science class passed BIO 201. Isolating for previous experience in BIO 156 or 181 (cell biology) produced 113 students, 76 (67%) of which passed the class.

It is understood that students who withdraw from the course do not always do so because of academic difficulties, there are family, financial, health or other factors that contribute ‘failure’. However, for the purposes of this informal assessment, it is assumed that these circumstances apply equally to all students, regardless of their previous biology experience, so it wouldn’t significantly alter the outcomes.

It is clear, and somewhat unsurprising, that students who have taken a prior college biology class succeed at a higher rate than those with only a high school biology background. This can probably be attributed to two key factors. First, as a community college, we have students of varying ages and a student who completed their high school biology class in ninth grade may have done so ten or more years prior to enrolling in 201 and their familiarity with key biological concepts has faded. Another factor is developing experience in how to study and manage your time for a college class. Students who have taken 100 level classes have had the opportunity to practice these skills and are likely to be more prepared.

There are many complicated topics covered in BIO 201 and no time to review cell biology concepts students are assumed to possess already, however, the data above suggests that many students could benefit substantially from a 156 or 181 class. At this time, since there is no 156 or 181 prerequisite for 201, developing and integrating a cell biology review into Canvas for all 201 students to complete should improve student success. To address the development of student’s time management and study skills, a weekly help session could be introduced, open to all 201 students, to systematically address common deficiencies in these areas.