

## Exploring Teachers' Influence on Student Success in an Online Biology Course

Instruction plays a critical role in student success. However, most studies of teachers' effects on student learning focus on face-to-face settings. Some aspects of online courses, such as the choice of synchronous or asynchronous instruction and the course structure, might reduce teachers' influence on their students. For example, online courses that are highly prescriptive, with teachers using the same materials, assignments, and assessments, might lessen online teachers' influence on student outcomes. By reducing the variation in teachers' instructional practices, highly structured online courses might also reduce differences in student performance across teachers compared with face-to-face instruction.

This study of student outcomes for segment 1 (similar to a semester) of an online high school biology course offered by Florida Virtual School examined the amount of variation in segment completion rates, students' end-of-segment exam scores, and time to completion that is attributable to teachers. Determining teachers' influence on students' course outcomes requires separating the influence of differences in teachers' instruction from the influence of differences in student characteristics. The analyses in this study looked at the total variation across students' course outcomes and attributed it to differences between teachers or between students.

### Key findings

- **Variation in student outcomes across teachers was slight for end-of-segment exam scores, somewhat greater for segment completion rates, and greatest for time to completion.** When differences in student demographic characteristics were taken into account, teachers were associated with none of the difference in student end-of-segment exam scores, 1.4 percent of the difference in segment completion rates, and 4.2 percent of the time to completion. Compared with other education interventions, the effect sizes for completion rates and time to completion are moderate to large.
- **Students with higher- and lower-ranked teachers had notable differences in time to completion and minor differences in segment completion rates and end-of-segment exam scores.** When teachers were ranked from highest to lowest influence on student outcomes, outcomes were consistently better for students of teachers ranked at the top and consistently worse for students of teachers ranked at the bottom.
  - **For segment completion rates the difference between a student of a teacher ranked at the 75th percentile compared with a similar student of a teacher ranked at the 25th percentile was expected to be 9 percentage points.** Overall, 73 percent of students completed the segment.
  - **For end-of-segment exam scores a student of a teacher ranked at the 75th percentile could be expected to score 0.75 percentage point higher (78.3 percent) than a similar student of a teacher at the 25th percentile (77.5 percent).** The average score for all students was 77.9.
  - **For time to completion the difference was more substantial.** A student of a teacher at the 75th percentile could be expected to complete the segment 2.4 weeks faster (in 18.9 weeks) than a similar student of a teacher at the 25th percentile (in 21.3 weeks). The average number of weeks to complete the segment was 19.8.