

Human Anatomy and Physiology (BIOL 2451K) Course Redesign at Georgia Gwinnett College

Using Student-Faculty Contracts and Self-Monitoring to Increase Student Success in Anatomy and Physiology I

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Human Anatomy and Physiology I (API) is a gateway course to careers in allied health. In order to be competitive for nursing, medical, and physical therapy programs, students need to be successful in API. Yet, most students have not had the experience with the rigor and substantial content of material that is required for this course. In this case study, we used known theories of behavior change that have worked in allied health to improve student success. The results of the study have implications for how and when students are taught accounting topics and the effect on their academic performance.

STATEMENT OF THE PROBLEM

Anatomy and Physiology I (API) is a gateway class to careers in allied health. Nationally, Human Anatomy and Physiology courses are believed to have among the worst undergraduate course failure and withdrawal rates (Hopper, 2011). Success in Anatomy and Physiology courses has been shown to be an excellent predictor of success in nursing programs (Lewis & Lewis, 2000). Therefore, in order to be competitive for admission to nursing, medical, or physical therapy programs, students need to be successful in API. Based on personal experience, most students are not prepared for and have not had experience with the rigor that comes with API in which 16 substantial chapters of material are required in 15 weeks' time. In this case study, we used known theories of behavior change such as Contract Learning and component of Self-Regulation known as self-monitoring (timecards) that have worked to improve student success (Frank & Scharff, 2013; Sebesta, & Speth, 2017). In order to perform well in API, students need to hold themselves accountable and also know exactly what will be required of them in order for them to be successful. Many students underestimate the time required to learn large amounts of material (Bash & Kreiner, 2014), which can lead to time management issues and poor performance. To make students more self-aware of their actual study time, students were required to keep timecards of their study time for API. Data suggest that students who study longer hours (Sturges et al., 2016) and work less hours (Harris et al., 2004) are more successful in Anatomy and Physiology classes. Thus, the contract and timecard intervention serve to provide students with much needed understanding of the rigors of this class.

METHODS

Students were required to sign a Student-Faculty Communication sheet (learning contract) indicating they were aware of the requirements to do well in the class. Seven items of importance were listed on the contract ranging from acknowledgement of the importance of attendance, due dates, integrity, and how to contact the professor. The most relevant statement they acknowledged indicated that they would need to study about 2-3 hours per day for the course to learn the material required adequately to perform well.

To make students more self-aware of their actual study time, they were required to keep timecards of their study time for API. Students were to include the date and time they began each study session and also the exact time each session was completed. Each log entry had the number of minutes of study tabulated and was summed for the week. Students were made aware that as long as they performed the task as stated they would earn full credit and they were to be honest and accurate.

During the first semester that this intervention was used, Anatomy and Physiology I students taught by one professor in 2 sections were given a Student Faculty Communication Sheet during the second week of class (after the add/drop period). In subsequent semesters (2 class sections of data), students were required to keep timecards in addition to the Student Faculty Communication Sheet. Relatively nothing major changed in teaching. Grades were compared with the previous classes taught by this professor (5 sections).

OUTCOMES

Percentage of course grades (A-F) are presented in Figure 1 for the control period (5 sections), contract only (2 sections) and contract + timecards (2 sections). The data demonstrate that percentage of As earned was increased (up to 3 times the amount) in classes with the contract + timecard when compared to the control class sections. Additionally, for the most current semester (1 section), when correlating the amount of time spent studying and the course grade (expressed as a percentage of total points), a positive correlation is demonstrated ($r = 0.60$) (Figure 2). Study time does not explain all the variance in student success. Factors such as study skills, sleep, motivation (Sturges et al., 2016), previous educational experiences (Harris et al., 2004), among others, likely play a pivotal role as well. We also do not know the accuracy with which all students indicated they studied, which could have influenced the outcomes. Students have indicated initially they did not understand why (even though it was explained in detail) logging their time would improve their success in the course, but they noticed the difference and their success in the class was directly related to the amount of study and dedication to learning the material outside of class.

PLANS FOR CONTINUATION AND EXPANSION

The contract + timecard intervention will be rolled out to six faculty teaching 12 sections in the 2020-2021 academic year. With this larger roll out, we will be able to address issues related to teaching styles (e.g. hybrid, online, face-to-face) and student demographics that may affect equitable outcomes (e.g. gender, ethnicity, first generation status, repeat status, previous GPA, number of credits during the semester, work hours). We will also be able to follow students into the next semester to determine if this intervention affects Human Anatomy and Physiology II course grades.

Figure 1
Percentage of A&P Students with Each Letter Grade

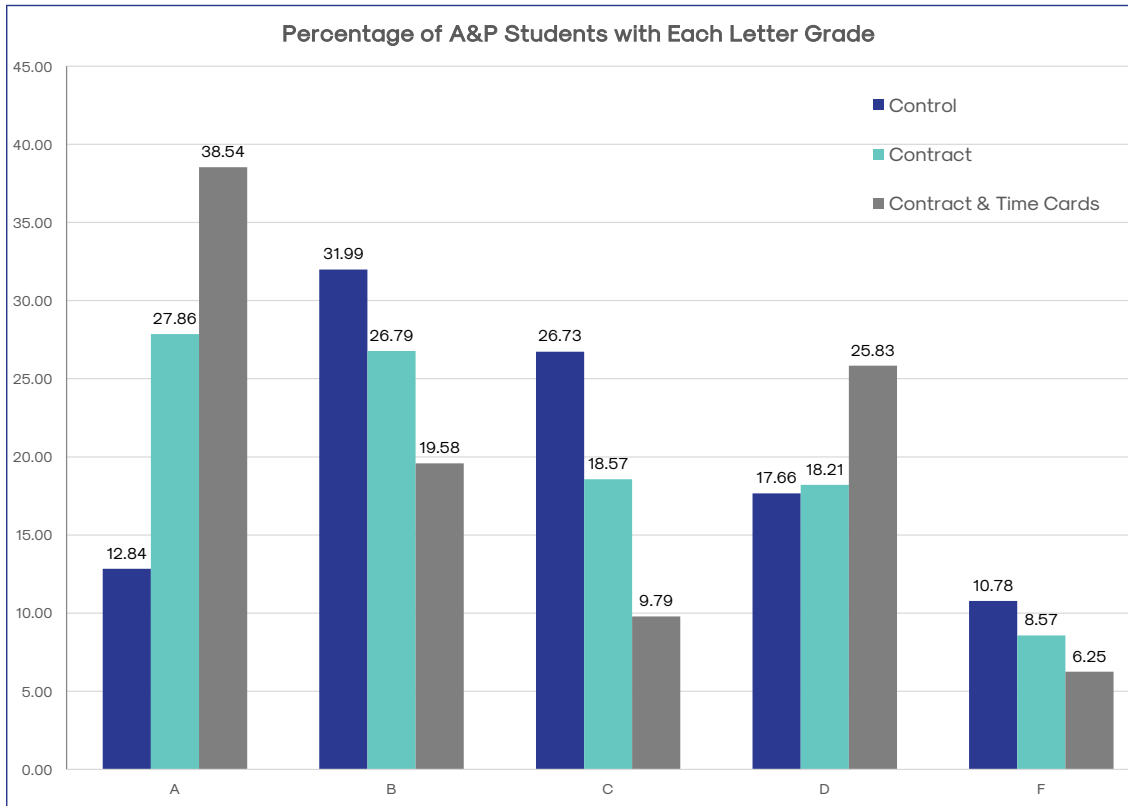
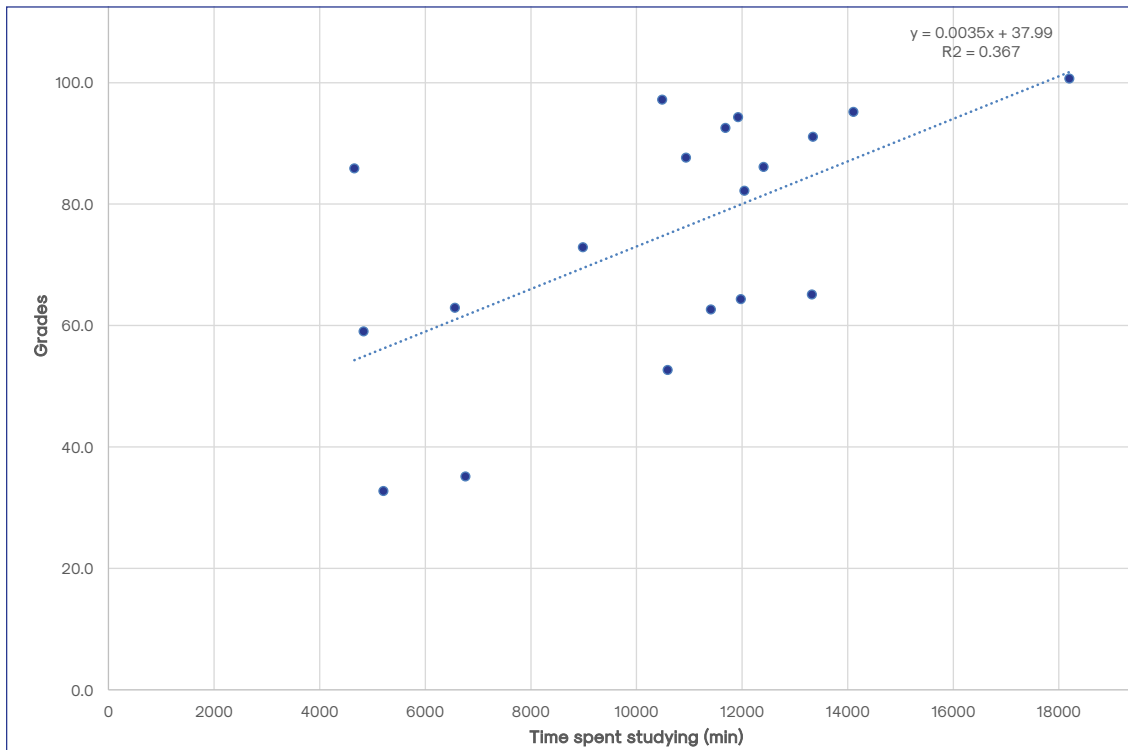


Figure 2
Time vs. Grades



LESSONS LEARNED AND POTENTIAL IMPLICATIONS

Students often underestimate the amount of time required to learn so adding the timecard component enhanced the findings over using the contract alone to allow students to visualize the amount of time they are devoting to studying. Additionally, given the rigor of this class, an understanding of student demographics influencing course grades will initiate further interventions targeted toward specific groups or suggestions related to specific preparation prior to taking this class. There are also numerous studies that indicate a contract can make people more aware of their behavior and result in a positive change. The results were a considerable increase in the number of As over previous semesters. It appears that making students more aware of what is required, how much they are studying, and requiring them to make a study schedule can result in improved performance and warrants further future investigation.

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