
Incentivizing Students to Encourage Consistent Study Group Attendance is Associated with Improved Course Performance

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Abstract

Human Anatomy and Physiology I is a rigorous course where developing strong study habits poses a challenge that many students have difficulty overcoming. In an attempt to help students better prepare for exams and improve their overall performance, we introduced incentives for participating in study groups. Here we examine the possible impact these study groups had on exam and course grades of students who participated in study groups versus those who did not, as well as the students' overall attitudes on incorporating these groups into their study habits. Students reported that participation in study groups was a positive experience that helped keep them on track with their material as well as aiding them in preparing for exams. Our goal was to help students develop good study habits that will set them on a path to success in their subsequent coursework. In addition, we anticipated that students would recognize the value of working in groups and strengthen their learning networks and sense of learning community. <https://doi.org/10.21692/haps.2020.008>

Key words: study groups, study habits, student performance

Introduction

Human Anatomy and Physiology I, a course geared towards first-year nursing and health professions students, is a rigorous course that historically has been a struggle for many students. Nationally, approximately 30 percent of students enrolled in introductory anatomy and physiology courses withdraw or receive a grade below C (Harris et al. 2004), with some institutions reporting as high as 50% of the students receiving a grade below C (Hull et al. 2016; Sturges and Maurer 2013). As at many institutions, many of our students come into the course having never taken a college level science course and have yet to develop the study habits needed to succeed in a course of this breadth and depth (Gultice et al. 2015). Learning a great deal of new material poses a challenge that many students have difficulty overcoming. This challenge is compounded by the fact that students must also simultaneously develop the strong study habits essential to academic success (Sebesta and Bray Speth 2017). Acknowledging that our students face these hurdles, we began to explore ways to assist our students in the process of developing their study habits.

Effective studying must be strategic, incorporating multiple tactics. Previous studies have shown that the amount of time spent studying does not always directly impact the performance of the student; rather the specific study habits of students have a greater impact on student success (Nonis and Hudson 2010). Deliberate practices, such as planning specific and consistent times for studying, have been shown to have a higher impact on improving student success than the number of hours dedicated to studying (Plant et al. 2005). Successful approaches to studying should be supplemented by a strong

learning community, as part of a framework to improve STEM student persistence (Graham et al. 2013).

A learning community has been described as an intentional practice of creating environments for students that foster relationships among peers with the hopes of enhancing the learning experience (Smith et al. 2004). Students interacting with their peers inside and outside of the classroom has the benefit of exposing them to various styles and techniques utilized in the learning process (Light and Micari 2013), while also increasing their sense of belonging to the learning community (Strayhorn 2019; Lewis et al. 2016). A mechanism for fostering this peer interaction with an academic focus is course-based study groups (Guenther et al. 2019; Sandoval-Lucero et al. 2012). Establishing learning communities, including the incorporation of study groups as part of these learning communities, has been shown to lead to increased persistence and overall better sense of belonging in students who were a part of these communities (Love 2012).

Knowing the importance of consistent and deliberate study, as well as the importance of interacting with peers and maintaining a learning community, we have aimed to encourage students to form study groups from the beginning of the Human Anatomy and Physiology I course. In the past we have simply recommended that students form these groups but had not provided an incentive for them to consistently meet with peers. The first exam of the semester tends to be a learning experience for many students, with changes in study strategies implemented following receiving the results of the first exam. In an attempt to help students on

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their path to improve their preparation for exams, as well as improve their overall performance, we introduced incentives for participating in study groups with fellow classmates and utilized a tool to for accountability, which in this case was “selfies” of the study group. The goal was for students to increase the effectiveness of the time spent preparing for the course, while also forming positive study habits and establishing peer connections that can be carried with them throughout their undergraduate careers.

Procedure

At the first class meeting following Exam 1, we discussed with students a new process that would allow students to receive extra credit for assembling and attending weekly study groups. Students were briefly coached on how to effectively utilize study groups. They were advised to form groups with classmates with whom they could work well, rather than friends. They were encouraged to come to the group with specific questions to work through and to set goals for what should be accomplished at each meeting. Students were allowed to form their own groups. Help, such as the use of sign-up sheets to facilitate group formation, was provided if requested to match up students with groups. Students could have groups of between two to four students and were asked to take “study group selfies” at each meeting and send them to their instructor. The selfies needed to include a time/date stamp to indicate when the picture was taken, show all students in the group, and include evidence of studying (books, diagrams drawn on white boards, etc.) in an appropriate location.

Students would receive one point for each week that an appropriate selfie was sent, with up to ten total extra credit points available for the semester, with extra credit points being worth up to 2% of their final grade. While selfies were used in our study for tracking participation, it would be possible to use alternate forms of tracking such as sign in sheets in the library, group reports of what was accomplished, or physical check in with an instructor/administrator. We chose to use selfies, as this was something many of our students were already doing on a regular basis and allowed them to check in from anywhere they were studying. The key to this process was providing an incentive that provided bonus points to raise the overall course grade, as well as the ability to track participation in study groups throughout the semester. Many of the students were initially excited about this opportunity simply because of the opportunity to earn the ten extra points. Of 54 students enrolled in the course, 37 students participated in consistent study groups.

Study group participation was tracked throughout the remainder of the semester by collecting and tallying the study group selfies received. Some study group selfies were rejected if they did not meet the criteria. Exam score data were analyzed by comparing performance of students who participated in two or more study groups over the remaining ten weeks of the term, with the average student participating in one study group per week over ten weeks, versus those who participated in only one or none, in order to determine the impact of consistent study group participation. The “study group selfie” incentive was implemented following Exam 1 and Exam 1 was used as baseline data. At the end of the semester, overall course grades were also examined. The 37 students who participated in study groups were also given a qualitative survey to evaluate their perception of the how the study groups aided their performance in the class and the likelihood that they would continue with study groups in future courses. The Institutional Review Board of Elmhurst College approved this study, (IRB #FY19-005), and informed consent was obtained from all participants.

Conclusion

We determined that students who were most likely to take advantage of the study group incentives were also those who performed significantly lower on Exam 1 than those who did not take advantage of the incentives (Figure 1A). Many students who performed below their expectations on Exam 1 expressed interest in this incentive as a way to gain additional points in the course and raise their grades. Many students who performed well on Exam 1 likely did not take advantage of the study group incentives because they already had higher levels of performance and likely had already established good study habits. It is important to note that there was a small portion of students who already participated in study groups prior to Exam 1, with many of these students performing well on Exam 1 and throughout the course.

We then examined performance on subsequent exams following the implementation of the study group incentives and observed that in comparison to their baseline Exam 1 scores, students who participated in consistent study groups showed improved scores on all of their remaining exams. For the remaining exams (Exams 2, Exam 3, and the Final Exam (Figure 1A)) and overall course performance (Figure 1B) there was no statistical difference in performance for all students regardless of whether they participated in study groups or not.

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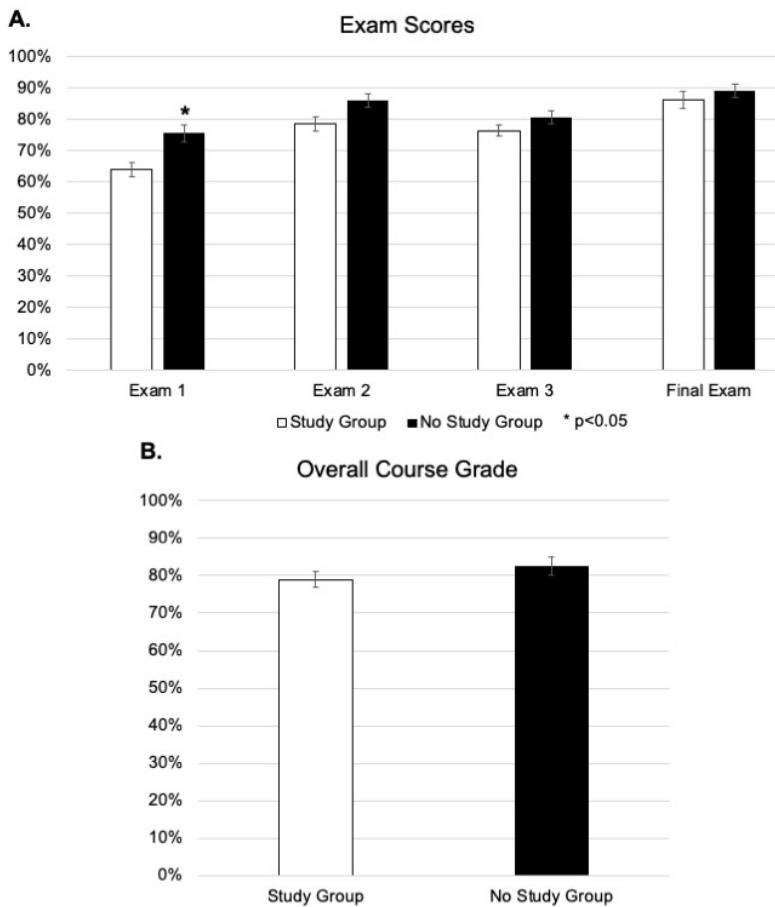


Figure 1. Student Performance. A) Course Exam Performance. Students who participated in study groups performed significantly lower on exam 1 than those who did not participate on study groups. Following the formation and use of study groups, there was no significant difference in exam performance between the two groups. B) Overall Course Performance. At the end of the course there was no statistical difference in performance between the study group and no study group students.

Student Response	Helped Keep on Track in Course	Helpful for Exam Preparation	Helped to Raise Grade
Agree	65.9%	74.4%	38.6%
Disagree	11.4%	4.7%	20.5%
Neutral	22.7%	20.9%	40.9%

Table 1. Student Feedback Survey. Students were asked to respond to statements regarding the effectiveness of study group participation. Overall students found groups to be helpful in preparing for exams and keeping them on track, but did not see the benefit to their overall grade.

Our data suggest that participating in consistent study groups with peers helped the initially weaker students improve their study habits and potentially contributed to their improved course performance. Based on feedback from students it appears this increase is due to several factors. Accountability and consistency were an overall theme of responses, with many students stating that meeting weekly with peers forced them to stay on top of the material because they did not want to be the one person holding the group back. Others stated that being able to talk through a process with a peer allowed them to realize what they did and did not know; giving them an opportunity to better focus their time spent studying.

In order to gain insight into student opinions of study group participation we collected survey data from those students who attended consistent study groups. Overall, students believed that the study groups helped to prepare them for the exams and to help them stay on track with the material for the course (Table 1). Interestingly, they did not associate the improvement of their grade with the attendance at study groups (Table 1).

While it is positive that students were able to see a correlation with the study group and preparation, the next step is educating students on the importance of utilizing a diverse range of study techniques that allow them to take ownership of their learning. Study groups not only reinforce the learning community and allow students to build peer connections, but also ensure that students study the same material multiple times in a variety of settings. The process of studying before, during, and after a study group increases the likelihood that students achieve a metacognitive awareness of what they know, and very importantly, what they do not know about course material. Helping students utilize metacognitive strategies to achieve self-regulated learning would be an important supplementary intervention in introductory Human Anatomy and Physiology courses (Sebesta and Bray Speth 2017).

An additional benefit of the specific chosen incentive employed here, the “study group selfie” draws on work that shows that selfies can be a mechanism for empowerment and connection to scientific spaces, particularly for traditionally marginalized groups (Liu et al. 2017). The study group selfie incentive is a fun, low resource opportunity for students to build both the learning community and their science identity.

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