Launching a Peer Supplemental Instruction Program for an Introductory Biology Course

Cindy Achat-Mendes
Georgia Gwinnett College, cachatme@ggc.edu

Allison D’Costa
Georgia Gwinnett College

Latanya Hammonds-Odie
Georgia Gwinnett College

Jennifer Hurst-Kennedy
Georgia Gwinnett College

Follow this and additional works at: https://digitalcommons.georgiasouthern.edu/stem

Recommended Citation
Achat-Mendes, Cindy; D’Costa, Allison; Hammonds-Odie, Latanya; and Hurst-Kennedy, Jennifer, "Launching a Peer Supplemental Instruction Program for an Introductory Biology Course" (2015). Interdisciplinary STEM Teaching & Learning Conference. 51.
https://digitalcommons.georgiasouthern.edu/stem/2015/2015/51

This event is brought to you for free and open access by the Conferences & Events at Digital Commons@Georgia Southern. It has been accepted for inclusion in Interdisciplinary STEM Teaching & Learning Conference by an authorized administrator of Digital Commons@Georgia Southern. For more information, please contact digitalcommons@georgiasouthern.edu.
Launching a Peer Supplemental Instruction Program for an Introductory Biology Course

Cindy Achat-Mendes, Jennifer Hurst-Kennedy, Allison D’Costa, Latanya Hammonds-Odie
School of Science and Technology, Georgia Gwinnett College, Lawrenceville, GA 30043

ABSTRACT

For the first time at Georgia Gwinnett College, a supplemental instruction (PSI) program was designed to provide peer-led instruction on a) principles of biology, chemistry, mathematics and b) academic skills e.g. self-regulated learning, strategies in studying and test-taking. PSI for Principles of Biology (Biol1107K) was carried out by PSI leaders who previously earned a grade of ‘A’ or ‘B’ in BIOL1107K, received training on tutoring practices and worked with faculty to develop active learning exercises/workshops for PSI sessions. PSI was open only to students who earned a grade of ≥ 75% on the first exam across four BIOL1107K sections. Comparison of exam grades revealed that PSI student performance was not significantly different from control (students who earned a grade of ≥ 75% on the first exam but did not enroll in PSI). The challenges at an institution lacking a PSI culture and strategies to encourage student commitment will be discussed. Enhancing Student Engagement and Student Learning in STEM fields at GGC Through Course-Embedded Research and Service

INTRODUCTION

Principles of Biology (Biol1107K) is an introductory biology course that applies fundamentals in chemistry and mathematics to support biology concepts.

Our assessment data for BIOL1107K have revealed that some course goals have been consistently unmet for at least the past 4 consecutive semesters. Specifically, the goal to describe structure and function of biological molecules averaged 65 ± 0.8% achievement and the goal to describe molecular mechanisms in DNA, RNA and protein averaged 66 ± 1.3%. These data reflect the performance of 818 students and suggest that supplemental instruction may be helpful in improving student performance in these particular course goals.

Since BIOL1107K is frequently taken by freshmen transitioning into college, it is possible that supplemental instruction in academic skills could assist students in meeting the higher demands of tertiary education. Academic skills include self-regulated learning, self-motivation, creating study guides and test-taking strategies.

Thus, the purpose of this project was to:

1. Develop a Peer Supplemental Instruction (PSI) Program to support students who are at-risk of not successfully completing BIOL 1107K.
2. Improve student understanding of:
   - Principles of chemistry and mathematics that underlie biology concepts
   - Academic skills that promote success in college.
3. Foster an enriched academic culture among STEM students through PSI.

METHODS

Lesson plans for PSI BIOL 1107K included both 1107K course content and academic support skills.

Instruction on course content was tailored to the student’s current place in the course and highlighted the underlying principles of chemistry and mathematics that should help students understand complex biology concepts e.g. cell energetics, enzyme specificity.

To help students develop academic skills, PSI was conducted using specific learning tools e.g. students learned through creating concept maps, writing their own exam questions. They were also trained to be more conscious of time management in and out of the classroom in order to become more effective learners.

RESULTS

Compared to Fall 2014, student participation and retention was markedly increased in Spring 2015. In Fall 2014, 9 students attended PSI with 2 students attending more than 50% sessions offered, whereas in Spring 2015 thus far, 26 students are on record with 7 attending more than 50% sessions.

DISCUSSION

Analysis of student performance in BIOL 1107K in Fall 2014 revealed that students who attended at least 25% PSI sessions were more likely to earn a C or above in BIOL 1107K.

In Spring 2015 thus far, at least 20% PSI attendance coincided with grades above 70% for two exams.