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Experience of Students Taking Hybrid General Organic and Biological Chemistry Course at A Community College

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Abstract

Hybrid courses also referred as blended courses have become incredibly popular. A hybrid course is part online and part in class/laboratory experience. There are many advantages of taking a hybrid course. For example, the hybrid learning experience offers less hours on campus providing flexible schedule for students. Course materials can be found online. Students, therefore, can repeat a lecture as many times as needed. In addition, a hybrid course can save money on transportation and other costs associated with on campus classes (i.e. childcare). BMCC along with many CUNY campuses offers hybrid classes for many courses. Although there is available literature for blended or hybrid learning in the university system, there is no domestic published study to support a national viewpoint on hybrid learning in a community college setting. In this study, by using student surveys, we report the first study to show experience of students taking hybrid General Organic and Biological Chemistry course at a community college setting.

Keywords: Blended Learning; Distance Education; Hybrid Learning; Online Education

Introduction

Distance education can be traced back to the late 1800's when the Tickman's Society formed one of America's first correspondence schools, providing education opportunity for students by mail [1]. Distance education acquired through correspondence by mail decayed with the creation of the World Wide Web [2]. Over the years, online learning has steadily grown in popularity. However, it has been shown that learning in an exclusively online environment could have a limited effectiveness and restricted learner engagement. Tandoh et al. [1] showed that students who took exclusively online courses may complain of feeling remote and an absence of physical interactions.

Hybrid or blended learning combines online and face-to-face instruction. It is, therefore, a viable option for students who would still prefer some face-to-face instruction time. For these aforementioned students, a hybrid course offers "best of both worlds" learning platform in which students benefit from face-to-face instructions and online learning. In addition, blended learning may help make college education more accessible for students especially for those who have job or family responsibilities and live in traffic dense, urban areas. Norberg et al. stated that hybrid learning also offers instructors the ability of harnessing the strengths of both face-to-face and online instruction [3]. Institutions also benefit from offering hybrid courses. Without changing limited campus infrastructure, universities and colleges are able to accommodate more students and more courses. Because of the aforesaid benefits, more universities and colleges are now offering hybrid courses.

According to Deschact et al., in 2014, 55% of colleges and universities offered at least one hybrid course [4]. Napier et al. believes that hybrid or blended learning will soon be the traditional model adopted by higher education institutions [5]. Hilliard et al. highlighted that it is crucial to have skilled faculty members with the essential technology resources and training to implement a successful hybrid learning program [6]. In order to overcome the challenges with hybrid teaching, BMCC implemented a mandatory 10 weeks training program for faculties teaching a hybrid course. During the training, faculties receive assistance for course redesign. In addition, the training includes learning strategies,

models, and course design principles for hybrid learning, hybrid course templates, directions, and recommendations on how to use The Blackboard Learning Management System to create a hybrid course.

Community colleges have a crucial role for educating and diversifying the STEM workforce. Moore et al. asserted that 44% of the B.S. and M.S. degrees recipients have taken one or more courses at a community college. The percentage is much higher for minorities and underprivileged students [7]. Community colleges are more preferred by under-prepared, underprivileged and working students due to the fact that they have open admission policies and offer quality education with relatively low tuition. General Organic and Biological Chemistry is a prerequisite course for most nursing and other allied health science majors. In addition, it is also the chemistry course that can be taken as a science elective by non- chemistry majors in many colleges. Number of hybrid General Organic and Biological Chemistry course sections offered by the Science Department at BMCC increased about % 86 from 7 to 13 sections between Fall 2015 and Fall 2018.The hybrid course is % 50 online content and 50 % face-to-face (3 hours per week laboratory component). Lecture content of the course is offered online using The Blackboard Learning Management System. Here, we report as the very first study to show experience of students taking hybrid General Organic and Biological Chemistry course at a community college setting.

Study and Results

In our study conducted between Fall 15 and Fall 18 through The Blackboard Learning Management System, we surveyed students who took hybrid General Organic and Biological Chemistry course. The survey was conducted anonymously and 511 volunteer students took it. Our findings shown in Figure 1 were as follows:

- 18% of the students were not aware that they registered for a hybrid class until the first day of classes (bar 1).
- 43% of the students stated that taking a hybrid class is harder than they initially thought (bar 3).
- 66% of students indicated that they would still enroll for a hybrid Chemistry class because they have other commitments such as work and family (bar 5).
- 63% of students expressed that the most challenging part of taking the hybrid course is application of the Math concepts to chemistry formulas (bar 4). Percentage increases to 70% for College Chemistry course that requires having higher Math skills (data not shown).
- 34% of students stated that they would not take another hybrid chemistry course (bar 2).

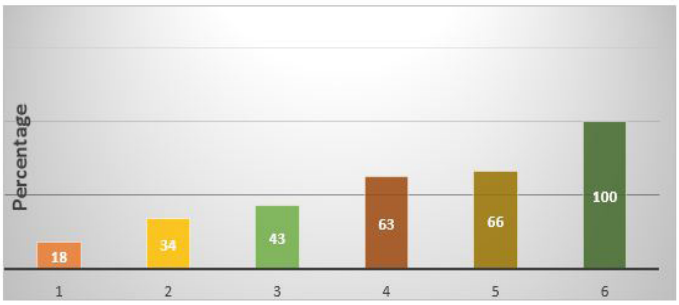

Figure 1: Survey Results shown in vertical bars represent percentage of the designated answers given by students. Bar 6 in the figure represents reference point.

Discussion

Our survey results revealed that there may be a lack of clear guidelines communicated to students about the structure and expectations of General Organic and Biological hybrid course. Students affirmed that they had incorrect expectations going into the hybrid course. In order to address our findings and to provide a successful hybrid course experience for students, we recommend that the following steps be taken:

- Clearer explanations of the hybrid class definition should be made on the college's registration system, CUNYFirst.
- College advisors should emphasize about the challenges of taking a hybrid chemistry class.
- An orientation to The Blackboard Learning Management System and technical support is needed for students.
- College advisors should take into account of Math background of students before recommending taking a hybrid chemistry class.
- Students need practice in the online environment especially in The Blackboard platform.
- Students need to be warned and trained for time management and other skill development related to taking hybrid courses.

The results of our study indicate that the college's hybrid learning program may benefit from specific training of the students prior to taking a hybrid General Organic and Biological Chemistry course. We believe that this very first study conducted at a community college setting will help other community colleges implementing hybrid or blended courses in their curriculum.

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