

BRIDGING THE GAP: SEX AND REPRODUCTION EDUCATION IN THE COLLEGE BIOLOGY CLASSROOM

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Bridging the Gap: Sex and Reproduction Education in the College Biology Classroom

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Introduction

In the United States (US) sexual assault (SA) rates and sexually transmitted infections (STIs) remain higher in college students compared to other sectors of the population (Center for Disease Control and Prevention [CDC], 2021). The 2021 Youth Behavioral Risk Survey by the Center for Disease Control and Prevention (CDC) found at least eight percent of high school students have experienced forced sex they did not want, with prevalence greatly increasing as people enter college (CDC, 2021). It is estimated that 33.2% of all college students, 26.4% of females and 6.8% of males, have experienced SA in their lifetime (National Center for Education Statistics [NCES], 2023a). According to the Bureau of Justice Statistic, men and women ages 18-20 are at the greatest risk of rape and SA, with the second highest at-risk populations being people ages 15-17 and 21-24 (NCES, 2023a). In 2021, approximately 85% of all full-time college students were under the age of 25 (NCES, 2023a). Of the 26.2 million reported STI cases in 2018, almost half of them are from people ages 15-24 years old despite them making up only 25% of the sexually active population (Zucker, 2021).

Comprehensive sex education can reduce rates of sexual activity and STIs (Shigeto & Scheier, 2022; Bordogna et al., 2023). Many comprehensive sex education courses also focus on healthy relationships, consent, and recognizing sexual assault and can serve as a primary prevention tool to sexual and dating violence (Sex Ed for Social Change [SIECUS], 2020).

However, only 29 states require any form of sex education in public K-12 schools. Even though states do not require sex education, 38 states do require education on the dangers of STI/HIV infection. Of these states that require sex education, most of them require it must “emphasize the importance of abstinence” (SEICUS, 2023). More, 13 states do not require that the information taught be scientifically accurate or include discussions on consent, and six states require education to actively discriminate against the LGBTQ community (SEICUS, 2023). The requirements that many states have for sex education do not apply to homeschooled children, who rarely get any form of sex education (Vicry, 2017). Despite the lack of comprehensive sex education requirements in most states, US voters overwhelming support sex education being taught in high school, regardless of political party affiliation (Kantor et al., 2020). While sex education is often limited in public high school, colleges and universities present a unique opportunity to reach a wide audience with disparate sex education backgrounds.

Current sex education models in colleges are largely focused on sexual violence prevention. The Clery Act of 1990 requires that colleges and universities maintain statistics about sexual and domestic violence on campus, have primary prevention and awareness programs for incoming students and employees, and teach protective measures (Jeanne Clery Disclosure of Campus

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Security Policy and Campus Crime Statistic Act of 1990 [Clery 2018]. The awareness program must include the definition of consent, safe and positive options for bystander intervention, information on risk reduction, and the institutions policies and procedures after a sex offense occurs (Clery 2018). While these programs show short term reduction in SA prevalence, long term effects have not been substantiated (Shigeto & Scheier, 2022; SEICUS, 2020). Instead, research has demonstrated that students are seeking comprehensive sex education that provides them with scientifically accurate information regarding pregnancy, STI, human sexuality, and healthy relationships (Astle et al., 2021; Hubach et al., 2019; Zori et al., 2023; Phikyaw-Kotov et al., 2023). To prevent SA, students want to see more content on behaviors that are clearly labeled as sexual assault, what to do following a sexual assault, and survivor testimony (Valduti et al., 2011; Phikyaw-Kotov et al., 2023). Since the COVID-19 pandemic, there has been large increases in both SA and STI rates among civilian college/university populations and presenting an opportunity to address this gap through the introduction of a college level comprehensive sex education course.

Design

We designed a course to address the educational gap in sexual health and reproduction found in young adults. The course, “Sex, Reproduction, and Sexuality”, is an inter-disciplinary, co-taught model with a biologist and a social scientist/sex educator as instructors, in addition to a number of guest lecturers. The student learning outcomes reflect this inter-disciplinary approach with high-level goals centered around synthesis, professionalism, analysis and application (Table 1). The course is a Biology Major’s elective course, with an intentionally low prerequisite of only a single introductory college level or AP Biology course.

Student Learning Outcomes	
At the end of the course, students will be able to:	Connect the biological, psychological, and social factors involved in human sexuality.
	Defend and maintain academic distance and personal security needed to analyze and discuss sexuality-related subjects and diverse ideology maturely in appropriate situations.
	Scientifically and critically analyze the field of human sexuality and apply it to building respectful, professional, intimate, loving relationships.

Table 1. Student learning outcomes for “Sex, Reproduction, and Sexuality” course.

The course is designed in a sex-positive, strengths-based approach using the framework of the Five Circles of Sexuality (Dailey, 1981): sexual health and reproduction, sexual identity, sexuality, intimacy, and sexualization. Each of the Five Circles is a block of approximately 5-7 class periods, with an additional initial introductory block of 5-6 class periods and a final block with student presentations, for a total of 7 blocks. Each block that is centered around the Five Circles begins with biological concepts and information, continues with psychological applications of the biological concepts, and ends with a whole class discussion. Formative, low-stakes assessments within each block include small quizzes (Knowledge Checks) and a Reflection Paper, which is an essay the student writes on their reaction and reflections on any

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topic within the block and must also include primary literature references to support or inform their reflections. Outside of class readings, often of primary literature or textbook chapters, supports student learning.

Additionally, the course begins with an activity to help students become more comfortable talking about sex, reproductive, and sexuality topics. The Sexuality Discussion assignment requires the student talk with a person outside of the class about sex in a professional manner. The student chooses the person (friend, roommate, partner, parent, sibling) and the topic. After the discussion, the student writes a reflection about the discussion and most importantly, how they felt having the discussion. At the end of the semester, they will have a second Sexuality Discussion and write another reflection. The intention is to notice the growth or change in their comfort level in having a professional discussion on a difficult or sensitive topic and is directly tied to the student learning objective “At the end of the course, students will be able to defend and maintain academic distance and personal security needed to analyze and discuss sexuality-related subjects and diverse ideology maturely in appropriate situations”.

There are three high-stakes summative assessments. A mid-term and final exam tests their content knowledge, synthesis and application, while a final project, consisting of a research paper and poster presentation, allows a deep knowledge dive on an aspect of the course that is of personal interest to the student.

Analysis

Pre and post-course assessments showed positive change in knowledge, attitude, and confidence. Every student increased their knowledge by the end of the semester (Figure 1), with the average score increasing 26%. Students specifically increased their knowledge in anatomy and physiology, porn literacy, sexual violence, sexual response, and defining sexual health in general. Figure 2 shows an example of how much a student increased their knowledge of basic anatomy. On average, scores on the anatomy of sex and reproduction increased from a score of 2.5 to 6.25.

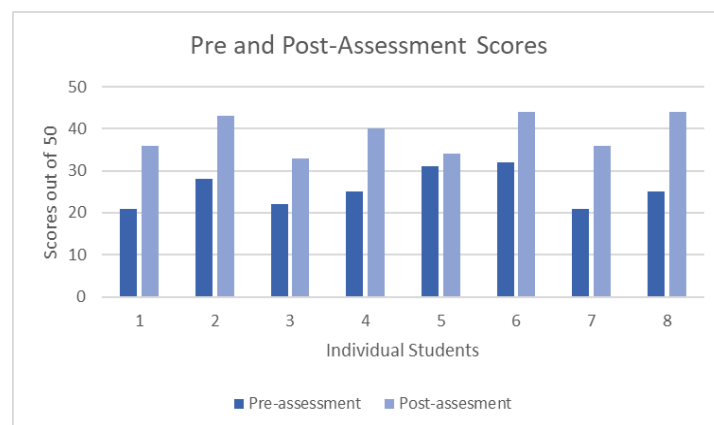


Figure 1: Pre and post assessment content knowledge scores by student.

Students' attitudes towards sexually transmitted infections, sexual diversity, and sexual violence became more empathetic and supported by their learning. Finally, students shared that they felt

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more confident in their knowledge being more accurate, their ability to communicate about sexual health to others, and feeling more empowered as a sexual being. Additionally, the analysis shows some areas, such as male genital health, older women's sexual health, theories on same sex attraction, and treatment of STIs, that need more focus as knowledge either did not change or showed less accuracy after the completion of the course. The qualitative feedback from the students about the course was positive with suggestions given by the students that all students should be required to take a course in human sex, reproduction and sexuality for both their personal well-being and as it can impact their relationships with others.

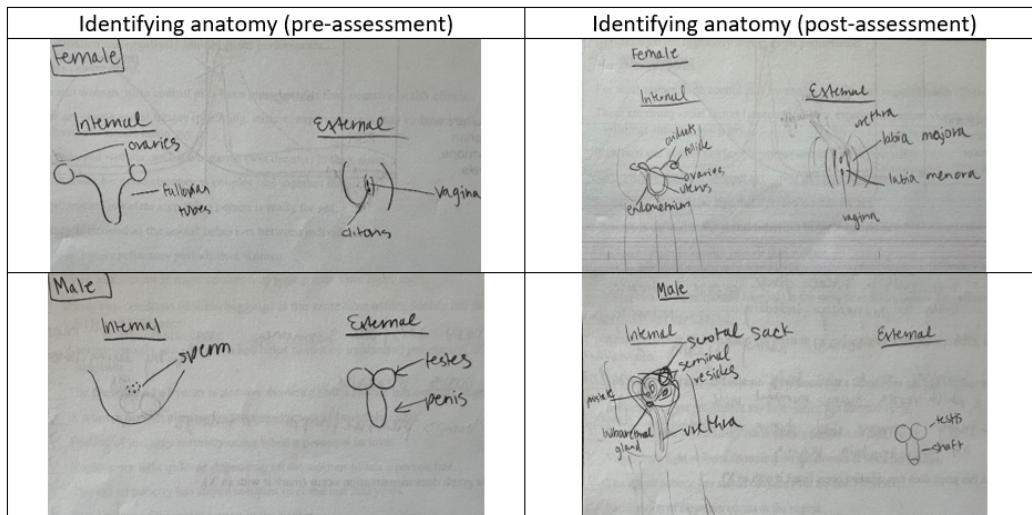


Figure 2: Drawing and labeling male and female anatomy pre and post-assessment.

Contribution

This is a unique Biology course, without much precedent, that fills a critical and incredibly important gap in the curriculum and in general education. By presenting the course design and its success, we hope to inspire other faculty and institutions to replicate or create similar courses and improve the sexual education of young adults. A course that focuses on human sex, reproduction and sexuality can not only provide protective factors against victimization and perpetration of sexual violence, but it can also positively impact physical, psychological, and reproductive health in general and influence relationships and pleasure.

General Interest

This will be of interest to other biology teachers and faculty that teach or would like to teach or would like to create curricula related to sex education. It is of especial relevance to those interested in diversity, equity, and inclusion in biology education, and those interested in SA and STI harm reduction.

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