Benefits and Limitations of Online Instruction in Natural Science Undergraduate Liberal Arts Courses

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Online courses in the Natural Sciences are taught three ways at New York University to undergraduate students majoring in the liberal arts and professional programs – synchronous courses in which students communicate online with the instructor and classmates in real time, asynchronous courses when faculty present course material for students to access and learn at their leisure, and hybrid or blended courses when part is taught asynchronously and part is taught face-to-face in a classroom with all students present. We have done online courses each way – Global Ecology (synchronous); Stars, Planets, and Life (synchronous and asynchronous); Darwin to DNA: An Overview of Evolution (asynchronous); Biodiversity Conservation (asynchronous); and Biology of Hunger and Population (blended). We will present the advantages and challenges we experienced teaching courses online in this fashion. Besides the advantages listed in the description for this session, another can be programmed learning that allows a set of sequential steps or a more complex branching of steps that allows students to repeat lessons multiple times to master the material. And from an academic standpoint, course content and assessment can be standardized, making it possible for each student to learn the same material. Challenges include resistance to online learning by a host of stakeholders who might be educators, students, parents, and the community. Equally challenging might be the readiness of instructors and students to teach and learn online. Student integrity issues such as plagiarism and cheating are a concern in a course taught online (Thormann and Zimmerman, 2012), so we will discuss our strategies to mitigate them.