

QUBES: a collaboration and professional development platform for quantitative biology education

Despite the demand for biology graduates with a strong quantitative background, undergraduate biology curricula often remain largely descriptive and conceptual. While a suite of educational resources exists on the web, the support and incentives required for faculty to adopt these resources are lacking. The NSF-funded Quantitative Undergraduate Biology Education and Synthesis (QUBES; www.qubeshub.org) project seeks to facilitate the adoption of quantitative reasoning skills into the biology classroom. QUBES offers a unique professional development (PD) model called Faculty Mentoring Networks (FMNs) to train and support college biology faculty in their development, adaptation and/or implementation of quantitatively focused curricular materials and approaches into their classrooms. We characterize FMNs as a long-term, low-intensity PD model, where a small group of faculty (10-15 individuals) participate in bi-weekly online meetings (<1 hour) for three to six months. These participants are supported by content and pedagogy mentors who facilitate conversation both synchronously and asynchronously via use of video conferencing and the QUBESHub, a virtual platform developed through the QUBES grant. The QUBES Hub facilitates and promotes professional development opportunities (FMNs), dissemination of research and collaboration products and community building among mathematics and biology faculty. By providing easy access to professional development and teaching resources, along with promoting teaching scholarship, QUBES can help faculty overcome the barriers to teaching quantitative biology and assist in the development of well-trained biologists for the next generation.