EDUCATIONAL ADAPTATION AND EVOLUTION: A CASE STUDY IN MICROBIOLOGY

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ABSTRACT

Educational innovation and curricula reform in undergraduate science often occur, in metaphorical terms, as revolutions, rather than as evolving, longer-term programs. However, arriving at the correct balance of pedagogical components, including application of knowledge and concepts, skills development, and critical thinking, together with valid and reliable modes of assessment, is not easily achieved. Further, foundation year biology subjects are often large enrolment and thus encompass considerable student diversity, including many who lack prior learning and related technical skills in the discipline. The development and refinement of technical skills is an important objective for many undergraduate biology and biomedical disciplines, including immunology, genetics, molecular biology and microbiology. For the study of microbiology, inculcation of a broad range of technical skills can be made in the context of microbial evolution and diversity, and the structure, function and pathogenicity of these organisms, using the human body as a suitable model to illustrate host and habitat specificity. An emphasis on technical skills development may lack inculcation of skills such as inquiry, problem-solving and deductive reasoning, which are highly valued attributes. This paper reports on the development, implementation, evaluation and longer-term revision of a problem-based learning activity in microbiology, framed within a contemporary scenario.

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