

Country Report

A Partnership Approach to Develop National Biology Curriculum in Singapore*

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(Received for publication: 10 December 2018)

*Reported at the 27th Biennial Conference of the AABE

Biological education in Singapore mainly mirrored the curriculum in UK in early decades. From 1970s, biology curriculum was developed by Curriculum Planning and Development Division (CPDD), Ministry of Education (MOE), Singapore. The curriculum undergoes a typical 6-year review cycle, with an intermediate third-year review to ensure currency of the curriculum. Over years, a partnership framework for curriculum design and implementation has established to foster close collaborations among ministry curriculum developers, school leaders, science educators and practitioners.

The developed national curriculum is very explicit to teachers, parents and even students across various educational levels (as shown in **Figure 1**). The entire body of curricular stakeholders (curricula developers, curricula resource developers, science educators, examinations board and teachers) has to understand the philosophy, intent and details of the curriculum to see through the successful implementation of the curriculum. A partnership (various dynamic forms of working together) plays pivotal roles in this process.

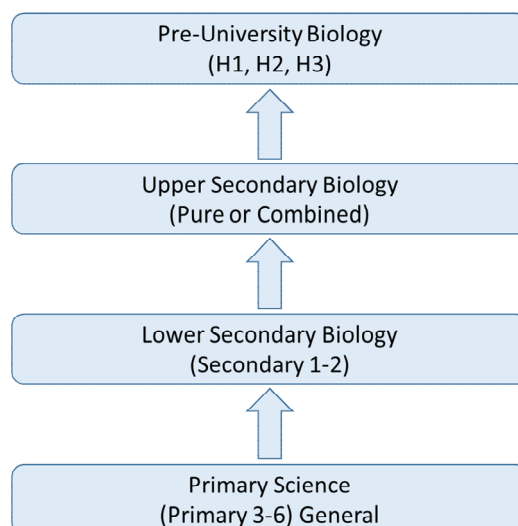


Figure 1: An overview of biology offered across educational levels in Singapore

A typical partnership framework of curriculum design and implementation includes: 1) Scanning literature and practices [curriculum planning officers from CPDD/MOE and partners from National Institute of Education (NIE) as curriculum review committee members]; 2) School leaders and practitioners providing feedback on the existing curriculum [head of department (HOD) or teachers from schools]; 3) Consulting expert panel of curriculum developers, school leaders, biology educators and practitioners [Academy of Singapore Teachers (AST), NIE, various departments (such as Educational Technology Division, Gifted Education Branch) and schools from MOE, and Singapore Examinations and Assessment Board (SEAB)]; 4) Consulting senior educators and administrators on curriculum and implementation [senior educators and administrators from MOE Headquarters]; 5) Producing textbooks and resources, with reviews by school practitioners [HOD and teachers from schools]; 6) Supporting professional development [pre-service and in-service professional developments by NIE, master teachers from AST, schools, and CPDD].

Taking an example of recent revisions on H2 Biology syllabus, the two new Extension Topics are based on important emerging biological issues impacting both the local and global contexts. They require students to demonstrate assimilation of the Core Ideas and extend their knowledge and understanding to real-world challenges. Furthermore, Extension Topics will equip students with the necessary knowledge and process skills to make informed decisions about scientific issues. In line with this, the

two Extension Topics chosen are (A) Infectious Diseases and (B) Impact of Climate Change on Animals and Plants. Both Extension Topics take up about 10% of the total H2 Biology curriculum.

As part of MOE's commitment to nurturing future-ready learners, all students in Singapore schools have been supported in their learning since this year by the Singapore Student Learning Space (SLS), an online learning platform (<https://learning.moe.edu.sg>) that contains curriculum-aligned resources and learning tools. With the SLS, students will be able to learn better through the use of technology. Students will be able to learn anytime, anywhere, and at their own pace, whether independently or with their peers. Teachers will also be able to use the SLS to complement their classroom teaching, further enriching students' learning experience. Such a platform is also under a partnership approach in which CPDD is working with NIE, AST, SEAB, etc., to develop meaningful contents and engaging ICT materials to improve students' learning experience.

Keywords: *biology education, curriculum, online learning, partnership, professional development, Singapore*

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