

# Critical thinking on a series of teaching and learning activities for science and...

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## **Concepts for Science and Technology**

Focusing on 'living things' as the main topic in the lesson plan sequence not only allows students to discover more about themselves and their natural environment, and thus, relate science and technology to their everyday lives, but also allows the teacher to integrate various concepts that meets the learning program of the school - Going Green and multiculturalism and diversity, encourages multidisciplinary approach in teaching, and the introduction of various issues that affect the lives and the future of the students. The Science and Technology syllabus (Board of Studies, 1991, p. 3) indicates that students learn best when "they are recognised and valued as individuals and social beings". In the lesson plan, one of the objectives of studying living things is to expand the learning experience to the topic of human beings and their basic needs. In the lesson, the students observe their own needs and identify how they are able to fulfil their basic needs. In this way, the students feel valued and recognised while being exposed to varied learning experiences. Moreover, the lessons acknowledge cultural differences and diversity by pointing out that the needs of human beings also include the need for individual and cultural expression. Not only does Bonnyrigg Heights Primary School endorse or support multiculturalism and diversity and integrate these in the school's learning program, but effective teaching strategies also encourage teachers to incorporate diversity in the students' learning experiences (Pumfrey & Verma, 1993, p. 160).

Apart from multiculturalism and diversity, and Going Green, the learning experiences were also designed to teach the students values, help them

acquire knowledge and skills, and apply what they have learned in practical situations. The learning experiences were established by employing the holistic approach, which similarly endorses the constructivism paradigm in teaching. The holistic approach not only allows the students to learn concepts, but also apply them, especially in construction and problem solving. In the learning experiences, the students get to relate ideas and concepts to their experiences and the real world, identify the problems (e. g. environmental problems), and attempt to solve the problem through construction. The holistic, constructivist, and interdisciplinary approaches that guided the creation of learning experiences allows practical learning with the implementation of meaningful learning experiences (Martin, 2011, p. 362).

The Board of Studies (1992, p. 3) also highlight the importance of creating a learning environment that allows the student to explore, interact, communicate, investigate, and reflect. The lessons were designed to allow students to engage in all these activities through guided, unique, and relevant experiences. To accomplish this objective, Karplus and Thier's 5 E learning cycle guided the construction of learning experiences that adhere to the needs of students for interaction, communication, investigation, and reflection (Cantu & Warren, 2003). The 5-E model guided informed lesson planning by highlighting the kind of experiences that the lessons should offer to facilitate holistic education. Moreover, the 5-E model is an effective guide in the construction of a focused lesson plan that reflects structure, organization, and proper sequencing.

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