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Keywords:

STEM Problem Based
Learning Solution

Learning areas:

Integrated STEM

A Sustainable STEM Solution: Designing & Building a Frog Bog in your School

Prior to 2019, students at our primary school in the Northern suburbs of Melbourne were not engaging with STEM Learning in a targeted and specific way. When STEM is accessible for students, participation, motivation and potential interest in future STEM pathways follows, and an early start is vital. To address the need, St Raphael's implemented a school-wide weekly STEM specialist lesson.

This short workshop shares practical experiences of the design and construction of a Frog Bog with senior students. It spotlights the school's journey using a Problem Based Learning (PBL) approach and the Design Thinking process to scaffold the integration of Science, Technology, Engineering and Mathematics, alongside Sustainability.

Initiated by discussions led by a senior students' knowledge and understanding of frogs and their global declining numbers, our Year 5/6 students accepted the challenge to design and build a Frog Bog amongst our school's thriving Indigenous Garden. As a sustainable school with a great love for the environment and all living things, creating a frog-friendly habitat was welcomed, encouraged and supported. As we are located between the Merri and Darebin creeks, our students contacted local environmental groups and were educated about local species, such as the Pobblebonk. Of the thirty-five frog species living in Victoria, sixteen reside in Melbourne with ten in the local Darebin area. Students soon recognised frogs as an important biotic factor in ecosystems, acting as indicators of water health due to their sensitivity to environmental change, thus appreciating the global impact of their local actions.

The Frog Bog PBL STEM solution addressed many learning areas, personal and social capabilities, collaboration, and critical and creative thinking. It provided opportunities to integrate Sustainability, Aboriginal and Torres Strait Islander Histories and Culture, and future learning opportunities, whilst providing curriculum links across all year levels.

Our wetland habitat is thriving and we continue to enjoy the sights of many water bugs calling our Frog Bog home. We are yet to 'see' a frog but we are certain they are hiding among the reeds and beautiful indigenous water plants. We learnt when supported by STEM professionals, teachers, field experts, and role models, authentic STEM projects with a Design Thinking approach can increase student engagement and motivation. Empowering students to envisage themselves as change makers provides rich learning opportunities that extend students to their full potential and hopefully inspires and encourages them to pursue STEM career pathways in their future.