

Ideas to integration: An innovative approach to nanotechnology education

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Summary:

Nanotechnology at St Helena Secondary College has progressed from an initial idea to an integrated program through an industry partnership with Bridge 8 and Nanotechnology Victoria. The program features approaches for different learning styles, engagement of the broader school community and innovative applications for cosmetics, superheroes and biomedicine.

Abstract

Nanotechnology education in secondary schools has often been a few classes taught by a sole passionate teacher. While St Helena Secondary College is fortunate to have passionate visionaries, the success of the St Helena Innovative Nanotechnology Education (SHINE) program lies in capability to transform an idea into a fully integrated initiative (Alford *et al*, NSTI Nanotech 2007, vol. 1, p. 631).

First, St Helena Secondary College, Bridge 8 Pty Ltd and Nanotechnology Victoria Ltd formed a partnership to develop a curriculum with a sound industry basis and reach beyond the school. The partnership benefits from sharing knowledge in teaching, futures thinking, science communication, technical nanoscience and commercialization. It also creates links with other academic and industry stakeholders. Second, the content defines nanotechnology through scale and properties, but covers the field by investigating a diverse range of applications including cosmetics, performance materials textiles, glass, and biomedicine that engages students' varied interests. Third, the program recognizes different learning styles and is taught by using different methods including animations, videos, displays demonstrations, experiments, PowerPoint theory modules, activity sheets and research topics. Finally, the curriculum has a strong focus on the basic physics, chemistry and biology required by the set curriculum, but also manages to involve students in a multidisciplinary way. This has been done through the creation of magazines, programming on animations in ICT classes and art workshops using gold imagery and shape memory alloys. In addition, Bridge 8 has developed a module on the social impacts of nanotechnology for the future that challenges students to think about the ethics and acceptance of new technologies.

The partnership between St Helena Secondary College, Bridge 8 and Nanotechnology Victoria has delivered an innovative nanotechnology education program that encompasses a variety of content, learning styles and disciplines. It is this unique and innovative approach that delivers valuable skills and positions the Victorian and Australian community to capture the benefits of nanotechnology.