

## Motivational Secondary Science Education: A Requirement for Promoting Tertiary Education

Liberato Cardellini<sup>1</sup> & Jack Holbrook<sup>2</sup>

<sup>1</sup>*Dipartimento SIMAU, Facoltà di Ingegneria, Via Brezze Bianche, 12 - 60131 Ancona, Italy.*

*E-mail: [l.cardellini@univpm.it](mailto:l.cardellini@univpm.it)*

<sup>2</sup>*Centre for Science Education, University of Tartu, 51014 Tartu, Estonia*

*E-mail: [jack@ut.ee](mailto:jack@ut.ee)*

*1. Background, framework and purpose.* Students arrive at university less and less prepared and motivated towards learning. For example, a Friedel-Maloney (1995) questionnaire proposed during first lessons for students enrolled in the first year of an engineering university course typically leads to poor results (less than 50% correct on any question). According to Osborne and Wittrock (1983) “pupils are unable to construct meaning from the problem statement or they are unable to link the constructed meaning to appropriate aspects of knowledge structures either because of inadequate linkages or because the structures have not been generated in the earlier learning process.” Reasons for this include science curricula no longer meeting the needs, interests and aspirations of young citizens (Hodson, 2003).

While there are concerns that the teaching of science subjects is not perceived as ‘education through science’ (Holbrook and Rannikmae, 2007), it is also suggested that secondary chemistry education is not meaningfully engaging students in the additional desire for further chemistry learning (Fensham, 2008). Science teachers at the secondary level are failing to find ways to select a context where conceptual learning can take place, make the learning relevant and interesting and, at the same time, encouraging students to develop problem solving skills both geared to education for all and as a conceptual base for tertiary and lifelong learning. The ‘true’ nature of science education needs to put the learning of science into an educational framework (Holbrook, 2010).

*Results.* A potentially promising improvement is proposed from the application of a different philosophy in the secondary science class. A European project (PROFILES, [www.profiles-project.eu](http://www.profiles-project.eu)) involving 21 partners from 19 different countries attempts to awake students’ intrinsic motivation as a stepping stone to engaging them in tackling scientific problems and making socio-scientific decisions. The approach is from a socio-scientific situation seen as familiar and motivational by students, while the teaching is challenging, inquiry-based and student-centred. Because of the central role of teachers in any educational improvement, a central goal of the project is the promotion of teacher’s scientific, as well as pedagogic/didactic, competencies. Ideas, actions, successes and difficulties in implementing the project in Italy will be presented.

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