



An Innovative Approach to Enhancing Pupil Engagement with Science and Technology

Kieran McGeown, Damian Knipe

St Mary's University College Belfast (United Kingdom)

k.mcgeown@smucb.ac.uk

Abstract

This paper is based on one aspect of a pilot project funded by the EU's Lifelong Learning Programme, the title of which is "Stimulating Science And Technology Competences Through Innovative Means For Teaching And Learning" (STIMULA). A report on the review of STEM (Science, Technology, Engineering and Mathematics) published in Northern Ireland has the objective of ensuring the future of STEM education within the region, with the report suggesting that: "A key factor in enjoying STEM is to increase the level of investigation and experimentation in the classroom. Perhaps the single most recurring theme around curriculum has been the importance of experimentation and practical work in retaining a young person's interest in STEM" (DEL, DE 2009, p124). The specific focus of this paper reports on the outcomes of a survey on young people's perceptions of science and technology and how these survey findings and relevant literature informed the design and implementation of two science and technology pilot projects for two Northern Ireland schools. The survey was conducted with 1,125 pupils from 13 post-primary schools in 5 European countries using a questionnaire, designed for the pilot project, which was administered to 11-17 year old pupils.

Relevant findings from the survey for this paper included: pupils being more interested in science and technology at school when working in teams on projects that involve testing and coming up with solutions to problems; pupils seeing learning in science and technology as contributing more to their understanding of problem-solving and scientific and technological careers; pupils claiming that science and technology offer the best way to understand the world, make life comfortable, and improve our environment thus benefiting society; pupils viewing those working in science and technology as being creative and hard-working, with the most popular career aspiration being a designer; and pupils wanting their schools to offer more visits to specific locations associated with science and technology that relate to their practical learning in school where they have the opportunity to meet and listen to science and technology experts.

One of the pilot projects involved the pupils investigating the principles of generating electricity by means of building a model of a hydroelectric turbine. The other pilot project facilitated pupils building a micro-robot for the purposes of programming it to complete a specific task. There was a cyclical learning approach taken to the overall pedagogical strategy applied to both projects. This involved pupils visiting two different locations where a hydroelectric turbine and industrial robots were being utilised for the purposes of increasing efficient use of resources and generating economic benefits to the local community. The knowledge gained by the pupils during these visits was then fed back into the learning cycle as applied by the teachers in each school.

References

- [1] Department for Employment and Learning (DEL) and Department of Education (DE) (2009) The Report of the STEM Review, Belfast Northern Ireland, Department of Employment and Learning (DEL) and Bangor Northern Ireland, Department of Education (DE).