Scientist in Residence - Interactive, innovative learning STEMing from within

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The Scientist in Residence (SiR) Programme is one of a number of Galway-Mayo Institute of Technology (GMIT) initiatives aiming to encourage involvement and interest in students and adults in STEM subjects such as marine science. In order to achieve this the programme promotes and supports marine science education through empowering students to generate scientific projects from their own areas of interest and to enable them to develop those ideas and see them to fruition.

The need for this current SiR programme is audience driven and was identified through the target school audiences in a pilot project run from 2014-2016 in the West of Ireland, where the programme initially focused on marine ecology and environmental science. SiR is a visit by an experienced retired scientist to a group of interested participants. A student centred learning approach, using a modern take on the Socratic method (Paul & Elder, 2007) with active student involvement, is carried out over 30-60 minutes e.g. a typical scheduled class period. The scientist facilitates interest–led questioning and problem solving, much more akin to real scientific endeavour where the results are unknown but driven by curiosity. The programme has three main strands focusing on different audiences: 1) Science Week Workshops 2) STEM Cafés: A casual open setting within a secondary school, which would underpin SciFest, a series of one-day science fairs for second-level students hosted regionally in third level colleges, and BT Young Scientist initiatives and 3) Hotspots for STEM: A gathering of adults or a class of students where the SiR will meet with the group, introduce and discuss science as a method of learning, introducing such concepts as hypothesis testing, the nature of scientific evidence and the temporary nature of scientific knowledge.

The purpose of this programme is to enhance engagement with STEM and to breakdown perceived barriers of engagement. Through developing a scientific mind set, participants will be able to see the relevance of science to everyday life fostering a new found enthusiasm in STEM subjects among family members and friends can generate a ripple effect and a cumulative impact.

The SiR project is currently developing a toolkit to support the SiR programme thus creating a sustainable model that can easily be replicated and rolled out through the Irish Institutes of Technology (IoTs) throughout Ireland. SiR is an ideal mechanism to harness the unique learning of retiring staff members and their extensive knowledge in their speciality area e.g. marine science that normally is lost to the education system. To ensure sustainability a framework around the SiR programme has been developed by GMIT, to create a model that can easily be adopted by others with the aim of creating a network of retired scientists.

Assessment of the SiR programme and its impacts to date have/will incorporate a number of evaluation tools e.g. the Kellogg's logic model (Kellogg Foundation, 2004), in conjunction with strategies to enhance peer feedback e.g. 2 stars and a wish.

References
- Kellogg Foundation, W.K. 2004. Using logic models to bring together planning, evaluation and action: logic model development guide.
- Paul, R., & Elder, L. 2007. Critical Thinking: The Art of Socratic Questioning. Journal of Developmental Education, 31(1), 36-37.