



Becoming an effective science teacher at the Department of Curricular Studies, University of Strathclyde

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The Department of Curricular Studies at the University of Strathclyde, Glasgow, has recently begun work on the Science-Teacher Education Advanced Methods (S-TEAM) project – a European-wide initiative involving 25 teacher education institutions in 15 countries, with a combined budget of over four million Euros, funded by the European Commission through its Science in Society, Framework Seven Programme.

The S-TEAM project is a response to the EU's concerns about levels of scientific literacy and problems in recruiting students to science, technology, engineering and mathematics (STEM) careers. It is widely agreed that teachers are important in shaping young people's perceptions of science, and the EU suggests that more advanced teaching methods might be a new means of supporting teachers. In particular, inquiry-based science education is proposed as an important way of changing the way STEM subjects are taught, and of increasing the motivation of students to engage with them.

The principal objectives of S-TEAM may be summarised as follows:

- Improve motivation, learning and pupil attitudes in European science education, resulting in increased scientific literacy and recruitment to science-based careers.
- Enable large numbers of teachers to adopt inquiry-based and other proven methods for more effective science teaching.
- Support teachers by providing training in, and access to, innovative methods and research-based knowledge.

Within this, the role of the Department of Curricular Studies is to support the incorporation of innovative teaching and learning practices, including inquiry-based science teaching, into initial teacher education in Europe. Arriving at a definition of 'inquiry-based science' is not itself a simple matter. It would, however, seem to involve *'a more authentic picture of the practical nature of scientific activity, incorporating a degree of "open-endedness" to reflect an uncertainty of outcome*



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[...] less associated with more routine practical work, such as measurement, specific techniques, or standard experiments in a prescribed curriculum' (McNally, 2006: 424).

The Department of Curricular Studies will produce a set of training modules for inquiry-based methods in science teaching, based on collaboration between teachers at different stages in their careers. Data will be collected on the abilities and qualities of participating teachers from interviews with them, their colleagues and pupils, as well as through the use of research-proven indicators of teaching practice. The aim is to provide an ambitious but realistic pedagogy for beginning teachers that blends the best of what is practised by accomplished science teachers with an action-oriented disposition to intervention in early professional learning.

The S-TEAM project argues that only through teacher education can new methods be sustainably implemented in classrooms. Building on our long experience of collaboration with practicing teachers, we will work with experienced science teachers in data collection, analysis, dissemination and evaluation, so also ensuring adequate focus on the context of science and science teaching. The challenges of teaching in an open inquiry-based manner will not then be evaded, but discussed and conceptualised in a way that accommodates the realities of teaching, and connects to the features of a practice that can enhance science teaching through increased pupil enthusiasm and understanding within classrooms and that encourage and support creativity through inquiry.

For further information, please contact Allan Blake, Department of Curricular Studies, University of Strathclyde. E-mail: a.blake@strath.ac.uk

Reference

- McNally, J. (2006) 'Confidence and Loose Opportunism in the Science Classroom: towards a pedagogy of investigative science for beginning teachers', *International Journal of Science Education*, **28**, 4, 423–438





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