

Work package 5 Innovative methods, initial teacher education and science

The objective of WP5, led by the University of Strathclyde (UNIVSTRATH), is to support the incorporation of innovative teaching and learning practices, including inquiry-based science teaching methods, into initial teacher education (ITE). A useful starter paper by [Jim McNally](#) can be found [here](#).

A poster for the presentation of S-TEAM/WP5 at the Engineering and Physical Sciences Research Council-sponsored University of Strathclyde Research Day, 17th June can be found [here](#).

Description of work

WP5 will produce knowledge, practices and tools to help teacher educators and pre-service teachers overcome constraints on the implementation of innovative methods in science education. This will involve adopting these innovative methods and principles in science teacher education itself, e.g. the use of group work and problem-based learning, dialogical learning and the acceptance of uncertainty within scientific inquiry. Their common theme is that they are based in existing teacher education institutions or systems, and that they address problems raised by teachers in applying innovative methods in science.

Sub-packages: WP5a (UNIVSTRATH) will produce a set of 3 subject-specific training modules for inquiry based science teaching based on collaboration between teachers at different stages in their careers and directed at overcoming uncertainty and lack of confidence in new teachers (at student level or within first or second years of service) regarding inquiry-based methods (del.5.1). These will comprise: a) overview statement that covers the educational case for inquiry-based science and the challenges it poses, especially for new teachers (ITE programmes and early years/induction) b) a general description of theoretically grounded pedagogy c) scenarios and examples based on realistic classroom situations, for each of the three main scientific disciplines and for interdisciplinary work d) DVD or web video of discussions with practicing teachers, supported by commentary (in English and also in languages other than English) e) DVD of lessons with actual inquiry-based learning activities, supported by commentary f) reading of selected articles with a review and questions for discussion, linking experience and theory

Deliverable 5.1 - format and contents 5.1a) overview statement that covers the educational case for inquiry-based science and the challenges it poses, especially for new teachers (ITE programmes and early years/induction) 5.1b) a general description of theoretically grounded pedagogy 5.1c) scenarios and examples based on realistic classroom situations, for each of the three main scientific disciplines and for interdisciplinary work 5.1d) DVD/video resource of discussions with practicing teachers, supported by commentary (in English and also in languages other than English) 5.1e) DVD/video resource of lessons with actual inquiry-based learning activities, supported by commentary 5.1f) reading of selected articles with a review and questions for discussion, linking experience and theory 5.1g) evidence from a children's view indicator (with DVD interview extracts, subject to permission) Delivery planned for M24 Project Team: Prof J McNally, A. Blake & Dr C Smith + 3 science education lecturers and a technician.

Deliverables WP5: (delivery month in brackets)

5a WP5 Training materials part 1 (M18)

5b WP5 Training materials part 2 (M24)

Products and events (range shows period of operation or staggered delivery)

- 5.1 Set of 3 subject-specific training modules for inquiry based science teaching (24)
- 5.2 DVD on use of practice placements for skill development in innovative methods (24).
- 5.3 Set of guidelines for teacher education courses in IBST/E (12).
- 5.4 Training package in cross-disciplinary methods in science education (18).
- 5.5 Training package on Integrated science and primary/secondary transition (18).
- 5.6 Report and training package on problems of IBST/E in multi-lingual contexts (18).
- 5.7 English-language web-based resource for teachers based on Viten project (6-36).

Deliverable	Products	Date started	Date Due
5a	5.3 - guidelines for TE		M18
	5.4 - TP in cross-disciplinary methods		
	5.5 - TP on integrated science		
	5.6 - TP on multi-lingual contexts		
	5.7 - Viten (half-way point)		
5b	5.1 - training modules (subject-specific)		M24
	5.2 - DVD on use of placements		
	5.7 - Viten - balance of modules		M24-36