Chapter 1
The Role of the Professional Doctorate in Developing Professional Practice in STEM Subjects

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ABSTRACT
This chapter presents a study into the impact of the professional doctorate as a learning opportunity for STEM professionals including engineers, pharmacists, nurses, STEM teachers, healthcare professionals, and computing professionals. The professional doctorate is a relatively new approach to doctoral study, which has much to offer to STEM. This form of doctoral study encourages the candidate to undertake project work which is based in, and contributes to, their professional practice. The candidates are experienced practitioners, who wish to raise their practice to doctoral level. This chapter presents a mixed methods study, which has collected and analyzed quantitative data obtained from a survey, qualitative data obtained from focus group sessions, and in-depth narrative accounts. Analysis of these data revealed a number of themes including the importance of trans-professional working, reflection, and development of “authentic” professional voice.

INTRODUCTION
Recent years have seen the emergence of professional doctorate programmes in many subjects, including STEM subjects (UKCGE, 2010). A professional doctorate offers experienced candidates an alternative to the traditional PhD, which has been designed to meet the requirements of practitioners (Lester, 2004). Such doctorates offer the opportunity to study part-time on a work-based project, which applies research methodology and rigor to the solution of a problem which is of relevance to the candidate, their organis-
The Role of the Professional Doctorate in Developing Professional Practice in STEM Subjects

The programme will also often aim to develop within the candidate the skills of self-reflection, reflexivity and criticality. This form of doctorate satisfies the demand for programmes which equip graduates with high-level transferable skills which meet employer requirements and market demand (Guthrie, 2009). Those studying on professional doctorate programmes are senior professionals, and exposure to these individuals provides academics with welcome links to industry, creating important new opportunities for knowledge transfer and providing opportunities for students and their supervisors to engage in research projects which have demonstrable impact on professional practice as studied by Hadacek & Carpenter (1998), who examined the impact of nursing doctorates.

Previous studies by Lester (2004), Taylor (2007) and Costley & Stephenson (2005) explored the balance between the workplace and academia, the concept of the “researching professional” and the concept of the doctoral level practitioner. This chapter reports on the authors’ experiences of running a professional doctorate and extends a previous study of student motivations for, and expectations of a professional doctorate programme (Smith, Curtis, Sanders, Kuit, & Fulton, 2011). The chapter presents a mixed research methods approach, including a questionnaire, focus groups and narrative accounts, which involved more than 50 students at different stages of doctoral study. This chapter outlines the key themes which have emerged from the authors’ reflections on the study, and presents some lessons learned which the authors believe will be of use to those who are running, or considering running, professional doctorate programmes within STEM subjects.

BACKGROUND

This chapter presents a case study of one Professional Doctorate programme. The Professional Doctorate (DProf) scheme under study has been running since 2007, and currently has over 70 students drawn from a range of professional backgrounds (Smith et al., 2011). The scheme was designed to meet the growing demand for a doctoral level qualification which enables candidates from business, industry and the professions to build an individual research programme based upon work which they are undertaking within the workplace (Smith, Walker-Gleaves, Fulton, & Candlish, 2009a; Smith et al., 2011).

The scheme enables a student to build up a doctoral submission based on a study situated within their own workplace. The candidate is required to undertake formal assessed coursework in the areas of reflective practice, research methodology and contextualization and planning, and to ultimately produce a doctoral thesis which demonstrates the contribution made to knowledge and the impact which they have made on their profession.

Each student is supported by two internal supervisors. The students follow similar enrolment, registration and annual monitoring processes as are followed by MPhil and PhD students. The students on the programme came from a variety of professional backgrounds, covering several STEM subjects. They include:

- Senior pharmacists, working on a variety of projects relating to professional pharmacy practice,
- Senior engineering and computing staff working on projects involving the acceptance and application of technology, and,
- Senior managers from business and finance; working on projects which involve the management of significant change within their professional context.