

OUTCOMES OF PROFESSIONAL DEVELOPMENT IN PRIMARY SCIENCE: DEVELOPING A CONCEPTUAL FRAMEWORK

PAUL DENLEY, KEITH BISHOP

University of Bath, UK

ABSTRACT

In a climate of continuing change, the continuing professional development of science teachers is an important issue, but one which is subject to resource constraints. It is vital that professional development is as effective as possible. This paper describes an attempt to examine the outcomes of such activities and to try to apply an existing categorisation system for framing these outcomes in terms of their impact at different levels on pupils, teachers, and schools. Data come from a number of large professional development projects for teachers in primary schools, the projects were funded by an independent educational charitable trust over a period of six years. Analysis of the data confirms that many of the categories proposed in the early 1990s are still applicable today but that new ones are needed to extend the framework, perhaps to reflect a changed context for science in primary schools. An attempt is made to show the relationship between categories identified.

1. THE CHANGING CONTEXT OF PROFESSIONAL DEVELOPMENT

In recent years in the field of school improvement (see, for example, Stoll & Fink, 1996), the quality of teaching has become increasingly recognised as a key factor in raising standards in schools. In turn, the quality of teaching is related not only to the calibre of teachers recruited and their initial training, but also to their on-going professional development. This is especially true in a context of massive educational change through the introduction of new government initiatives and the promotion of research-based practice. The implication for and the changing context of professional development of teachers has been explored in some depth by, for example, Watson and Fullan (1992), Guskey & Huberman (1995), Craft (1996), and Loucks-Horsley et al. (1998). Craft identified a range of weaknesses inherent in much professional development practice at the time of writing. She argued that professional development tended to be geared to individual needs rather than school needs, that provision was largely in the form of courses, attendance was voluntary, and there was little acknowledgement that participants would almost certainly have different starting points. This sort of professional development also disrupted teaching and appeared to have limited impact on practice with little or no dissemination thereafter. Dissatisfaction with this kind of provision led to the

promotion of school-based approaches with teachers learning from one another. More recently the situation in England has been characterised by the introduction of new educational initiatives and priorities with their own associated professional development programmes (see, for example, DfES, 2003). The emphasis here is on institutional needs rather than those of individuals, and attendance is often required or at least expected. The demonstration of impact is still a key issue with clearly defined sets of performance indicators linked to national assessment programmes.

The picture of provision is currently fragmented with numerous agencies and independent bodies, in addition to higher education institutions and local education authorities themselves, offering a variety of courses and activities. Accompanying such diversification, however, are concerns about the suitability, and impact of what is available, questions regarding its effect on teacher practice and its long-term sustainability (see Ingvarson, 1988; Craft, 1996; Guskey, 2000; Adey, 2004). There is also the need to address concerns with the balance between the needs of the individual teacher and the needs of the institution; to move to a more holistic view of 'continuing professional development' rather than 'INSET' ('INService Training'). Hargreaves and Fullan (2000) suggest that "professional learning is not to be found in a choice between school-based and course-based modes of provision, but in an active integration of and synergy between the two". However, there are few research-based models for effective professional development (Bell & Gilbert, 1996; Adey, 2004) and, when resources are limited, it is important that they are used to maximum effect.

2. THE ASTRAZENECA SCIENCE TEACHING TRUST (AZSTT)

To mark the Millennium, the pharmaceutical company, AstraZeneca PLC, established the AstraZeneca Science Teaching Trust (AZSTT) through a £20m endowment. An initial priority for the Trust was to provide support for professional development programmes to raise the confidence and competence of primary teachers in science. Trustees invited proposals from appropriately qualified 'providers' who would design and run their own projects with clusters of about twenty primary schools and with funding of about £90 000 (£136 500) per provider. (Details of projects can be found on the Trust's website <http://www.azteachscience.co.uk>.) The programmes have been designed by the 'providers' themselves (usually staff from university education departments working with local education authority staff) allowing their own distinctive approaches and ways of working (see for example, Lloyd et al., 2000; Crebbin, 2001; Jarvis and Pell, 2001; Rodrigues, 2003). All of the Trust's projects were required to conduct their own internal evaluations, but the Trustees also commissioned from the University of Bath an independent evaluation which has given a valuable opportunity to look across a range of approaches.