

Chapter 16

A Paradigm Shift for Teachers' Professional Development Structure in Turkey: Moving from Instruction to Learning

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ABSTRACT

This chapter concerns the importance of in-service training programmes for the professional development of science teachers. A description will be given of the general structure of in-service training activities in Turkey and the results will be presented of an in-service training project, which was conducted as part of a three-year longitudinal study. Within the scope of the project, an in-service training programme for science teachers was conducted based on the argument-based inquiry approach and the theoretical premises upon which it is built. The project aimed to direct science teachers towards student-centred teaching. The training activities focused on the scientific thinking underpinning the teachers' professional knowledge and practices, their perceptions on learning, and their pedagogical practices and epistemological beliefs. The extent to which these activities affected classroom applications and learning processes was investigated and the findings suggest that they had a statistically significant impact on the teachers' pedagogical development and on the students' academic performance and thinking skills.

DOI: 10.4018/978-1-5225-1624-8.ch016

INTRODUCTION

The Importance of Professional Development Programmes for Science Teachers

Considering today's competition-based systems and developments on the international stage, one can appreciate the importance of raising individuals possessing the skills that respond to the requirements of our age (Miaoulis, 2009). For this reason, investment in science, technology, engineering, and mathematics (STEM) literacy are very much on the increase. In STEM education, as in all educational systems, this investment and support focus on the *students*, *teachers*, and *training programmes* and the efficiency and effectiveness of educational systems depend on these three elements moving in harmony towards a specific target. A breakdown, weakness, ineffectiveness, or malfunctioning in any of these elements is bound to lower the efficiency of the whole system. Today, academic performance and a positive change in students in terms of various skills are considered to be the barometers of efficiency and success in education.

The most important factor in ensuring these positive changes in students in terms of various skills and academic performance is, undoubtedly, the teacher (Rivkin, Hanushek, & Kain, 2005), because, as pointed out by researchers who have studied the link between the exercise of the profession and the learning outcomes, a crucial relationship exists between teachers' adequacy and students' performance (Hoy & Miskel, 2008; Junor-Clarke & Fourniller, 2012; Guskey, 2014). Training well-qualified teachers is only possible through an effective implementation of the pre-service and in-service educational activities (Darling-Hammond, 1999; Darling-Hammond & Bransford, 2005). In order for teachers to keep up with the contemporary requirements of the educational sector in their professional lives and to educate individuals possessing the skills demanded of them, they need to constantly refresh their capabilities and take part in the in-service training activities organized for this purpose. The link between in-service training programmes and teachers' professional development directly affects school development and students' learning quality (Kennedy, 1998). When this interaction is taken into account, the need for a proper assessment of the targets and structuring of these in-service training programmes cannot be missed.

Structure and Implementation of Professional Development Programmes

All over the world, traditional in-service training programmes are implemented in the form of seminars and presentations to raise the teacher's teaching abilities and knowledge however, improving teachers' performance in the classroom requires developing their practical skills (McCann, Alan, & Gail, 2012). In-service training programmes should not only present teachers with the opportunity to learn new things but also provide them with a setting where they can put their theoretical knowledge into practice (Avalos, 2011). Only in this way can in-service training programmes achieve their main goal of bringing about a difference in teachers' attitudes and beliefs, their ways of teaching, and their students' performance (Guskey, 2002). From this perspective, traditional in-service training concepts appear to have become *a learning environment for all*. This transition has had an impact on the administrators, teachers, and the schools which are continuous research settings for students (Fullan, 2001; Knight, 2007; Loucks-Horsley, 1995; Loucks-Horsley, Stiles, & Hewson, 1996).

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