

# HANDBOOK OF THE RESEARCH PROJECT

“Establishing a knowledge base for quality in education:  
Testing a dynamic theory of educational effectiveness”

## **PROMOTING QUALITY OF TEACHING: A DYNAMIC APPROACH TO TEACHER PROFESSIONAL DEVELOPMENT**

Leonidas Kyriakides  
Anastasia Panayiotou  
Bert Creemers  
Panayiotis Antoniou

# **HANDBOOK OF THE RESEARCH PROJECT**

“Establishing a knowledge base for quality in education:  
Testing a dynamic theory of educational effectiveness”

**PROMOTING QUALITY OF TEACHING: A DYNAMIC APPROACH TO  
TEACHER PROFESSIONAL DEVELOPMENT**

## ACKNOWLEDGEMENTS

---

The research presented here is the country specific part of a 3-year project (2009-2012) entitled “Establishing a knowledge-base for quality in education: Testing a dynamic theory of educational effectiveness” (Project Protocol Number: ΔΙΕΘΝΗ/ΕΣΦ/0308/01), funded by the Cyprus Research Promotion Foundation.



## TABLE OF CONTENTS

---

<b>INTRODUCTION.....</b>	<b>1</b>
A dynamic approach to teacher professional development.....	5
<b>IMPROVING OF TEACHING BY MASTERING SPECIFIC COMPETENCES: The Competency - Based Approach.....</b>	<b>8</b>
Definition and Main Characteristics .....	8
Strengths and Weaknesses .....	11
<b>IMPROVING OF TEACHING THROUGH CRITICAL REFLECTION: The Holistic Approach</b>	<b>18</b>
Definition and Main Characteristics .....	18
Strengths and Weaknesses .....	21
Conclusions about the two dominant approaches to teacher training and professional development .....	27
<b>CHARACTERISTICS OF EFFECTIVE TEACHER TRAINING AND PROFESSIONAL DEVELOPMENT PROGRAMMES: A Dynamic Approach To Teacher Professional Development.....</b>	<b>29</b>
Characteristics of teacher professional development programmes .....	29
A Dynamic Approach To Teacher Professional Development .....	40
<b>AN EXPERIMENTAL STUDY ON USING THE DYNAMIC MODEL FOR DESIGNING TEACHER PROFESSIONAL DEVELOPMENT PROGRAMMES.....</b>	<b>46</b>
<b>CONCLUSIONS - IMPLICATIONS FOR RESEARCH, POLICY AND PRACTICE .....</b>	<b>52</b>
<b>REFERENCES .....</b>	<b>56</b>

## INTRODUCTION

---

Teacher training and professional development are considered essential mechanisms for enhancing teachers' content knowledge and developing their teaching practices in order to teach to high standards (Cohen & Hill, 2001; Darling-Hammond & McLaughlin, 1995; Smith & O' Day, 1991). Over the recent years, the demand for improved quality of teaching and learning, and for increased accountability and higher academic standards have put issues related to effective professional development high on the agenda of educators, researchers and policy-makers. Professional development is usually used in a broad sense, frequently encompassing 'all types of learning undertaken by teachers beyond the point of their initial training' (Craft, 2000, p. 9). According to Guskey (2000), the term refers to those processes, actions and activities designed to enhance the professional knowledge, skills and attitudes of teachers so that they might, in turn, improve the learning of students.

Despite the recognition of its importance and the pressures emanating from high-stakes accountability systems, most professional development opportunities remain fragmented, poorly aligned with curricula and inadequate to meet teachers' needs (Borko, 2004; Cohen & Hill, 2001; Corcoran & McDiarmid, 2000). In this context, each year, schools, districts and educational systems spend a considerable amount of money and resources on in-service seminars and other forms of professional development, which are intellectually superficial and do not take into account what we know about effective teaching and how teachers could better learn and implement such practices (Ball & Cohen, 1999; Kyriakides, Creemers, & Antoniou, 2009; Putnam & Borko, 1997). At the same time, educational reform movements around the world are setting ambitious goals for student learning (Borko, 2004). However, although teachers generally support high standards in teaching and learning, many teachers are not prepared to implement teaching practices based on such standards (Cohen, 1990; Elmore & Burney, 1996; Elmore, Peterson, & McCarthy, 1996; Grant, Peterson, & Shojgreen-Downer, 1996; Sizer, 1992). This is exactly why there is now more than ever the need to support and guide teachers to respond effectively to the growing demands of increased accountability and the need to raise student learning standards by developing effective professional development programmes that can promote change in classroom practices (Ball & Cohen, 1999; Fullan & Miles, 1992; Putnam & Borko, 1997; Spillane, 1999; Wilson & Berne, 1999).

Although researchers are beginning to examine the effects of professional development on teaching and learning, few studies have explicitly compared the effects of different approaches to professional development (Garet, Porter, Desimone, Birman, & Yoon, 2001). Thus there is a clear need for new, systematic research on the effectiveness of alternative strategies in relation to professional development. This is also stressed by the USA

National Research Council, supporting in a research review the need for more research studies to determine the efficacy of various types of professional development activity (Bransford, Brown, & Cocking, 1999). In this context, it is acknowledged that in the literature of teacher professional development there exist a variety of views on the methodology, structure and philosophical perspectives of different approaches to teacher training and professional development, and the role of teachers in the developmental process (Day, 1999; Hargreaves, 1994).

In particular, Zeichner (1983) was the first to identify and describe the four representative paradigms in teacher education and professional development. He defines paradigm as a 'matrix of beliefs and assumptions about the nature and purposes of schooling, teaching, teachers, and their education that gives shape to specific forms of practice in teacher education' (p. 3). The first is the traditional *craft paradigm*, an apprenticeship model, focusing on the accumulation of wisdom, based on the field experiences of teaching involving the trial and error of practitioners. The second paradigm is what Sprinthall, Reiman and Thies-Sprinthall (1996) call the *expanding the repertoire* paradigm. The focus of this approach is less on highly explicit and discrete instructional strategies and teaching skills and more on the acquisition of comprehensive instructional models of teaching, like direct instruction (knowledge transmitter model), inductive enquiry and interpersonal approaches to learning. Then predominant in teacher education is the *competency-based paradigm* also known as the *expert paradigm*. Based on a technical production metaphor and positivistic epistemology, this paradigm focuses on mastery of knowledge and teaching skills identified by expert academics and university researchers. Finally, opposing the *competency based paradigm* is the *inquiry oriented paradigm*, also known as the *holistic or reflective paradigm*, which is more like a metaphor of liberation. This paradigm emphasises the development of teachers' capacity for reflective action through an examination of the moral and political implications of their teaching.

Other analytical frameworks also exist with underlying principles similar to the ones identified by Zeichner (1983). For example, Tanner and Tanner (1990) distinguish between a traditionalist and a progressive movement. The traditionalist movement is based on an economic model in which the function of education is conceived of as the transmission of the culture (a conception from which the academic tradition originated), which is assumed to remain unchanged and permanent. From this perspective the functions to be performed by teachers and the content to be transmitted to students are predetermined, and teaching is based on authority and discipline, which reminds us of the main principles of the Competency-Based Approach (CBA). The progressive movement, a reaction to the traditional approach to education, has its origins in the emergence of science as a means to develop educational knowledge, but also in the idea that people create and develop their own knowledge and

culture, and that education should serve the process of transforming society (Kliebard, 1986); this resonates with some of the elements of the Holistic Approach (HA) to teacher professional development.

The CBA has had a significant effect on teacher training and development from the 1980s onwards, both in terms of development needs (e.g., Further Education National Training Organization, 2001) and the methodology used in teacher training and professional development programmes (Brooks, 2002; Last & Chown, 1996). In this context, competences and standards for teachers can be found nowadays throughout the developed world (Christie & O'Brien, 2005). Such standards refer to competences expected at different stages of a teacher's career and provide a framework for the development of teacher professional development programmes. On the other hand, the dominant approach nowadays to teacher training and professional development is that of reflective practice (Golby & Viant, 2007). This approach refers to various practices, ranging from reflection as a component of skill and a means of fostering effective teaching, to reflection as a heightening of one's awareness of social justice in educational practice. At the same time the holistic nature of this approach refers to a certain vagueness in relation to the content of teacher reflection, which may include all skills, attitudes, perceptions, motivation and moral disposition associated with teaching and learning (Cruickshank & Metcalf, 1990; Feiman-Nemser, 1990).

Nevertheless, many researchers in the field of teacher professional development are critical of the eclectic approach often reflected in teacher education programmes since elements of these traditions are combined in different ways (e.g., Donmoyer, 1996). Merging elements of different paradigms is also supported by Zeichner (1983) himself who argues that these traditions are not uniform, that they overlap and contain contradictions and tensions, but that the principles that underlie them are helpful in analysing the implications for teacher education and teaching in general. Thus there is a need to develop an integrated approach by merging elements of the two dominant approaches to teacher professional development in order to overcome their main weaknesses and enhance their potential to make a significant impact on teaching practices and student learning. In particular, reflection needs to be predicated upon something to think about (Zeichner, 1993). That is, there must be content which is clearly related to teaching skills to address the needs of different groups of teachers, supported by validated theoretical frameworks. At the same time, teachers' critical reflection in relation to these teaching skills should be encouraged. Thus both teacher experiences and critical reflection, and the knowledge base of Educational Effectiveness Research (EER) revealing groupings of teaching skills should constitute the major elements of teacher training and professional development programmes.

Apart from the philosophical perspectives and the methodology to be employed, in our efforts to develop an effective professional development programme we also need to

clarify that such programmes could have various targets related to teacher knowledge and practices. A useful schema to help us overview the variations of such knowledge and practices has been proposed by Shulman (1987), who identifies seven types of teacher knowledge: pedagogical knowledge, content knowledge, curriculum knowledge, pedagogical content knowledge, knowledge of learners and their characteristics, knowledge of educational contexts ranging from the workings of the groups or classroom, the governance and financing of school districts to the character of communities and cultures, and, finally, knowledge of educational ends, purposes, values and of the philosophical and historical bases of education. Among these categories, is teachers' pedagogical knowledge. Pedagogical knowledge goes beyond knowledge of subject matter to that required for effective teaching. From this perspective it relates to teacher behaviour in the classroom that can maximise student learning gains. This is important as identifying specific practices fundamental to supporting student learning is at the heart of building an effective system for the professional training and development of teachers (Ball & Forzani, 2011).

However, a review of the literature reveals that, despite the amount of studies on teacher training and professional development, the vast majority of these seem to ignore the results of EER, which describes exactly how teacher factors and teaching skills contribute to student learning. Since every effort to train teachers inevitably refers to what an effective teacher is or how an effective teacher should behave in the classroom in order to maximise the learning potential of the students, we argue that teacher professional development programmes should be linked to the results deriving from research on teacher effectiveness. This argument was put forward three decades ago but was not developed further, either for research or for policy purposes. Specifically, Gage (1978) claims that research on teacher professional development and that on teacher effectiveness have been conducted separately and with little reference to one another. In addition, Katz and Rath (1984) support that the view few investigators of training methods have rationalised the content of the professional development programmes by taking into consideration research on teaching effectiveness and very few have evaluated the impact on student learning of the teaching skills they developed. At the same time, researchers on teacher effectiveness have spent little time speculating about the methods that might be used to develop teaching skills that were found to be associated with student outcomes. Three decades after the publications by Gage (1978) and Katz and Rath (1984), very similar conclusions about research on teacher education were drawn by the AERA panel on research in teacher education (Cochran-Smith & Zeichner, 2005). This mutual isolation is particularly unfortunate for anyone attempting to draw implications for teacher education and professional development from research on educational effectiveness. It can be claimed that research on teacher training and development should increasingly take



into account the results of research on teacher effectiveness, addressing the skills and competencies that are found to contribute to student learning.

### *A dynamic approach to teacher professional development*

The development of a dynamic approach to teacher education and professional development which could make a contribution towards merging the findings of EER with the initiatives to improve education in general and particularly teacher training and professional development is supported. Since EER aims to identify factors associated with student achievement, we make use of the available knowledge base to identify those factors that are found to be associated with student achievement. Although there are many different approaches to learning, such as the direct active teaching approach (Joyce, Weil, & Calhoun, 2000) and the new learning approach (Schoenfeld, 1998), which refer to different skills that teachers need to develop, the proposed dynamic approach is based on the assumption that an evidence-based approach to teacher training and professional development should be adopted. Rather than focusing on a specific approach to teaching, teacher training and teacher professional development should be concerned with developing those skills that found to be associated with successful learning outcomes, irrespective of the approach from which they are derived.

The second essential characteristic of the dynamic approach has to do with the fact that teacher factors concerned with teacher behaviour in the classroom are related to each other. In this context, the concept of grouping of factors has been proposed (see Creemers & Kyriakides, 2008) in an attempt to establish more comprehensive improvement strategies. Thus teacher training and professional development should not be concerned with the development of isolated teaching skills but with different types of teacher behaviour that address specific groupings of teacher factors. Recent studies have revealed the types of behaviour that need to be developed and have been found to be associated with learning outcomes (Antoniou & Kyriakides, 2011; Kyriakides et al., 2009).

Thirdly, the dynamic approach takes into account the importance of recognizing the fact that each teacher/group of teachers has specific needs in terms of improvement, implying that the content of the teacher training and professional development will vary accordingly. This suggests that teachers with the same profile (i.e., teaching experience, initial training qualifications, duties) may have different needs and priorities for improvement and may need to concentrate on working towards the development of different skills. In order to identify the priorities for teacher improvement, at the outset data about teacher behaviour in the classroom should be collected and factors that need to be addressed and further developed should be identified.

Fourthly, it is acknowledged that teachers should be actively involved in their professional development courses and should have a clear understanding of how the factors

addressed will have an impact on student learning. For example, in training courses on improving classroom management, teachers need to understand that the factors addressed are related to the effective use of teaching time, which is always limited. Therefore students' engagement, which determines learning outcomes, could be increased by improving teachers' skills associated with these factors. This implies that we should use the knowledge base of EER in order to design professional development programmes which aim to help teachers understand the importance of teacher factors and develop the skills associated with these factors. Specifically, the conceptual framework provided by the dynamic model of educational effectiveness (Creemers & Kyriakides, 2008) is used for teacher improvement purposes. In this context, we promote the establishment of strategies for teacher professional development which place emphasis on the evidence stemming from theory and research. Thus the value of a theory-driven approach to teacher training and professional development is stressed. The need to collect multiple data about the skills of teachers in order to identify their improvement priorities is also emphasised. In this way, it is argued that a theory-driven and evidence-based approach to teacher training and professional development should be established.

Fifthly, a distinctive feature of the dynamic model, which is used as the theoretical framework of the proposed dynamic approach to teacher training and professional development, is that it not only refers to factors that are important in explaining variation in educational effectiveness, but also attempts to explain why these factors are important by integrating different theoretical orientations of effectiveness (Heck & Moriyama, 2010; Hofman, Hofman, & Gray, 2010; Sammons, 2009). In this way, teachers could become aware of both the empirical support available related to the factors involved in their developmental programme and the way these factors operate within a conceptual framework. Through this approach, teachers are offered the opportunity to utilise in a flexible manner the existing knowledge base on effective teaching, adapt it to their specific needs, and develop their own strategies and action plans for improvement. Thus the dynamic approach is neither based on improvement prescriptions or predetermined requirements for teachers to follow in order to improve their skills nor on relying solely on teachers themselves to identify exclusively what can be done, and how, in order to improve the quality of their teaching. The dynamic approach provides teachers with the opportunity to identify their improvement needs and make use of the available knowledge base in order to develop their action plans for the purpose of improving their teaching skills.

Sixthly, the dynamic approach supports the view that the advisory and research team, which is responsible for coordination and the general provision of the developmental programme, has an important role in facilitating and supporting teachers in their efforts to develop and implement their action plans in their classrooms. Thus it is not expected that

teachers should make use of the available knowledge base of effective teaching to design their own action plans without discussing and exchanging views with the Advisory and Research Team (A&RTeam) responsible for coordinating the developmental programme. This implies that the A&RTeam is expected not only to be monitor or facilitate the training meetings, but also to coach teachers in utilising the knowledge base of EER and support them on a systematic basis. Another related crucial element of the dynamic approach is that the A&RTeam should also support teachers to establish formative evaluation mechanisms and collect data on the effectiveness of the programme throughout the improvement process.

Seventhly, monitoring the implementation of teacher action plans in classroom settings is an essential part of the dynamic approach to teacher professional development. During this procedure, teachers are expected continuously to develop and improve their action plans on the basis of the information collected through formative evaluation. Critical reflection on the implementation of the action plans is also an important aspect of formative evaluation. It is important to stress that critical reflection and collaboration with peers are important elements in all aspects of learning and throughout the improvement process. Thus the dynamic approach seeks to initiate changes in educational practices by encouraging teachers systematically to reflect on their teaching practice and to work with other teachers throughout the whole curriculum in order to improve the effectiveness of existing practices and assist in the development of new ones, based on the grouping of factors included in the dynamic model of EER and their particular priorities for improvement. For example, teachers could be encouraged to keep their own reflective diaries in order to identify ways to improve their action plans. At the same time, the A&RTeam should help teachers collect additional data from other sources and test the internal validity of their evaluation mechanism by comparing such data. In this sense, the dynamic approach is also concerned with whether, and to what extent, teachers can develop their teaching skills and integrate them into a more self-consciously articulated model of classroom pedagogy.

Finally, the dynamic approach also refers to the importance of conducting summative evaluation in order to identify the impact of the developmental programme on the teaching skills of the participating teachers and on the learning outcomes of their students. Measuring the short- and the long- term impact of the dynamic approach is important since it could help us investigate the added value of using this rather than other approaches to teacher professional development, such as the CBA (Last & Chown, 1996; Robson, 1998; Whitty & Willmott, 1991) and the HA (Cornford, 2002; Korthagen, 2004). The results of summative evaluation are also important in relation to taking decisions as to whether some groups of teachers need to design new action plans in order to address new priorities for improvement. This implies that teachers should be continuously involved in improvement efforts in order to move from the initial stages to the more demanding stages of effective teaching.

## **IMPROVING OF TEACHING BY MASTERING SPECIFIC COMPETENCES: The Competency - Based Approach**

---

In the previous part of the handbook the importance of teacher professional development for improving student learning was emphasised and issues related to the fact that most professional development opportunities remain fragmented, poorly aligned with curricula, and inadequate to meet teachers' needs were mentioned. It has also been argued that teacher training and professional development should draw on TER, which aims to identify teaching skills associated with student outcomes. Research on teacher training and professional development has been dominated by two different and rather opposing approaches: the CBA and the reflective approach. In this part we provide a description of the main characteristics of the CBA and elaborate on its main advantages and weaknesses.

The CBA, also referred to as performance-based teacher education and professional development, was spawned in the 1970s, supported by grants from federal, private and state sources in the USA and began to have some impact on European educational systems in the 1980s (Tuxworth, 1982). Since then, this approach, prompted by policy-makers and articulated in practice through national standards, has been a source of controversy and debate within the field of education and training (Ollin, 2002). Although the term itself is less frequently used in teacher professional development nowadays, the concept pervades practice. Many components of this approach have had a significant effect on teacher training and development from the 1980s onwards, both in terms of identifying development needs in relation to teaching standards (e.g., Further Education National Training Organisation, 2001; Further Education Unit, 1986) and the methodology used in teacher training and professional development programmes (Brooks, 2002; Last & Chown, 1996). In this context, competences and standards required of teachers can be found nowadays in many countries (Christie & O'Brien, 2005). Such standards refer to competences expected of teachers at different stages in their careers and provide a framework for the development of teacher professional development programmes.

### ***Definition and Main Characteristics***

Competency-based professional development refers to an educational movement that advocates defining educational goals in terms of precise measurable description of the knowledge, skills and behaviours teachers should possess at the end of a course of study (Guskey, 2005). The apparent official interest in linking teacher training and professional development to the achievement of certain specified and isolated competences has initiated a flurry of activity on the part of various educational systems, agencies and institutions with the aim of exploring the potential of competency-based approaches to teacher improvement.

However, no consensus has yet emerged about the meaning of 'competences' or the specific competences that should be engendered by initial teacher education or teacher professional development courses.

Finding a single definition for 'competency' is problematic since there are so many. Competency-based training has been described as 'a bandwagon in search of a definition' (Spady, 1977), and much the same applies to 'competency-based teacher education' today. According to Bunda and Sanders (1979), generally there are two types of competencies. One definition conceives of competence as a hypothetical construct, while the second refers to a standard of performance, either implicitly or explicitly. The first type of competency has much in common with constructs such as, 'skill', 'achievement', and 'intelligence' constructs. 'Competency' when used in this way fits into certain conceptual frameworks. When curriculum specialists talk of 'collecting lists of competencies', they are using the term to refer to a construct. However, the breadth of the construct definition varies greatly: in some cases, competency encompasses a broader meaning than the word 'skills' and refers to a combination of cognitive, affective and psychomotor skills. Other individuals use competency as synonymous with 'behavioural objective', which is generally a restrictive definition of a skill. As for the second type of competence, which refers to a standard of performance, either implicitly or explicitly, the term closely parallels definitions of mastery or criterion levels of performance.

Likewise, Whitty and Willmott (1991) argue that in the training courses they examined the term 'competence' is less than explicit about what it is meant to convey. Nevertheless, they identify two major definitions of a competence: one referring to the ability to perform a task satisfactorily (in which the task and the criteria of success are clearly defined), and a wider one in which competence encompasses intellectual, cognitive and attitudinal dimensions, as well as performance. The competences specified in some courses are the minimum or threshold ones necessary to perform particular teaching activities and, in others, they are those which are characteristic of the 'good or effective teacher'. More generally, there are differing views about whether a competence is something that is either a specific achievement or, alternatively, a dimension of performance necessary for performing at different levels. For the purposes of this handbook, the word competency is used in the broad sense, referring to knowledge, attitudes, skills and behaviours that facilitate intellectual, social, emotional and physical growth in children (Weber, 1972). The basic concepts of this approach, as recognised by several researchers (e.g., Delker, 1990; Foyster, 1990; Norton, 1987), are simple and straightforward:

(1) *Programme requirements are derived from, and based on, the practice of effective teachers:* Rather than systematically studying disciplines such as psychology and mathematics, the CBA is based on, and organised around, conceptualisations of 'best

practices' in teaching. This implies that such programmes consider what teachers should know, be able to do and to accomplish, with graduation requirements based on such outcomes. In addition, the competencies comprising the content of the programme are carefully selected to suit the tasks that teachers perform daily and which were found to be related to student achievement.

(2) *Requirements are stated as competencies*: Requirements describe what the student must demonstrate for successful completion of the programme. Such requirements employ observable actions (using objectives such as 'use', 'organize', 'sequence learning'), while avoiding non-observable ones, such as 'understand' and 'perceive'. What teachers know about teaching seems less important than their ability to teach and to bring about change in their pupils;

(3) *Instruction and assessment are specifically related to competencies*: Competencies are defined prior to programme implementation and are made known to learners. The major criterion for including content and activities in a specific instructional programme is the extent to which this will contribute to the demonstration of programme competencies. Instruction not directly linked to competencies is eliminated. Assessment of student teachers is also based exclusively on program competencies and takes the participant's knowledge and attitudes into account but requires actual performance of the competency as the primary source of evidence.

(4) *Learner progress is determined by demonstration of competencies*: In traditional courses, a student excelling in one phase of the course can compensate for weaknesses in other phases, ultimately earning a pass grade. With the CBA, students are expected to meet at least the minimum standards for each and every competency required in the programme. Evaluation in traditional courses typically involves administering knowledge-based tests: while such assessments can certainly be used in competency-based programmes to measure mastery of information, the primary focus is on measuring mastery of skills. Thomson (1991) reports that the decision to recognise a performance as satisfactory by demonstration of competence should be the basis for the success of a competency-based programme. Moreover, Foyster (1990) argues that assessment in competency-based programmes must be criterion-referenced, with the criterion being the competencies upon which the programme is based. Likewise, Richards (1985) indicates that simulation and work sample performance tests should include a checklist or some type of rating scale. Moreover, Norton (1987) believes that participants in a competency-based training programme should learn in an environment that replicates or simulates the work place. Similarly, Richards (1985), in writing about performance testing, indicates that assessment of skills requires tests using simulations (e.g., models and role plays) or work samples (i.e., performing actual tasks under controlled conditions in either a laboratory or class setting). Thus evaluation of skills is considered to be

an integral part of teaching and an important element of all competency-based programmes. Based on the evaluation results, a decision is made as to whether the trainee has mastered the specific skills and thus can proceed to the next teaching module. The satisfactory completion of training is based on achievement of all specified competencies.

(5) In addition to the essential elements of this approach, there are other implied and related characteristics: (a) *instruction is individualised and personalised*: this implies that the participating teachers are expected to follow their own pacing and the participants' knowledge and skills are assessed as they enter the programme so that those with satisfactory knowledge and skills may bypass training in the competencies already attained; (b) *the learning experience of the student is guided by feedback*: in relation to the previous characteristic, and as a result of the evaluation process, each participant should receive individual feedback based on his/her performance, which highlights areas for further improvement; (c) *the programme as a whole is systematic*, which implies that there is a schedule of meetings to be followed and material to be covered; and (d) *instruction is modularised*, which implies that usually detailed training material has been developed to target the selected competencies, which is structured by reference to isolated skills (modules) that need to be addressed one at a time. A course may be classified as competency-based, but unless specific competency-based materials and training approaches (e.g., learning guides and checklists) are designed to be used as part of the programme, it is unlikely that the resulting course will be truly competency-based.

### ***Strengths and Weaknesses***

Despite the fact that the CBA was initiated as the most effective approach to prepare and develop teachers and was nominally employed for several years, it was criticised as a mechanistic approach (Houston, 1988). Although the term itself is less frequently used in teacher professional development nowadays, the concept pervades practice. This is mainly due to the appeal of the CBA in its emphasis on pragmatism in determining the content of teacher-education programmes, its potential for improvement through research, and its systematic approach to preparing and developing teachers. This section provides an overview of the main strengths and weaknesses of this approach.

#### *a) Strengths and Advantages*

The rationale supporting this approach is its reliance on objectives specified in advance and known to the learner. It assumes that human beings are goal-oriented and that they are more likely to achieve such goals and objectives when overt actions are taken to achieve them. According to De Landsheere (1988), definite advantages of this approach are the functional learning, the clarity of objectives, the easy use modular individualised instruction and the

more objective evaluation. As a consequence the CBA serves as an agent of change and it improves teaching and learning (Docking, 1994). Since competency-based approaches to teaching and assessment offer teachers an opportunity to revitalise their education and training programmes, quality of assessment can be improved, and the quality of teaching and students' learning will be enhanced by the clear specification of expected outcomes and the continuous feedback that competency-based assessment can offer.

A number of studies have described the advantages that the CBA can bring to both initial teacher training and professional development (Brooks, 2002). These studies highlight the clarity associated with competences, the clear statements they provide regarding the skills that need to be demonstrated, the criteria used for assessment and the recognition given to prior achievement (e.g., Last & Chown, 1996; Whitty & Willmott, 1991). It has also been argued that they can contribute to making professional practice in education more transparent and clarify the expertise that is required of teachers (Hodkinson, 1995). As Robson (1998) argues, this could help to delineate further the boundaries of teachers' job and, as a result, emphasise the professional nature of work in schools. Another advantage of the CBA is that the focus is on the success of each participant. As Watson (1990) states, the CBA 'appears especially useful in training situations where trainees have to attain a small number of specific and job-related competencies' (p. 18). According to Norton (1987) the CBA has several advantages which, among others, are that participants achieve competencies required in the performance of their jobs; participants build confidence as they succeed in mastering specific competencies; participants receive a transcript or list of the competencies they have achieved; training time is used more efficiently and effectively as the trainer is a facilitator of learning as opposed to a provider of information; more training time is devoted to working with participants individually or in small groups as opposed to presenting lectures; and finally; more training time is devoted to evaluating each participant's ability to perform essential job skills.

Several researchers have studied the CBA in several domains, such as vocational training (Chyung, Stepich, & Cox, 2006; Jackson et al., 2007; Jang & Kim, 2004; Jorgensen, 2005; Kaslow, 2004; Mulder, Weigel, & Collins, 2007), information technology (Caniels, 2004; Chang, 2006, 2007; Sampson, Karampiperis, & Fytros, 2007) and general education (Baines & Stanley, 2006; Biemans, Nieuwenhuis, Poell, Mulder, & Wesselink, 2004). Supovitz, Mayer and Kahle (2000) studied the effects of intensive, standards-based professional development on science teachers in Ohio. They found that teachers became more positive about instructional reforms and more likely to use inquiry-centred pedagogy as a result of participating in intensive, standards-based professional development.

An important meta-analysis of research in the CBA was conducted by Gliessman, Pugh, Dowden and Hutchins (1988). Their analysis was related to the identification of



variables influencing the acquisition of explicit and generic teaching skills, in particular questioning skills. The variables identified through an analysis of 26 studies were classified under three general categories: (1) method of training, (2) characteristics of trainees, and (3) characteristics of the training setting. Methods of training included instruction and instruction followed by practice. Instruction-based approaches involved comprehension, demonstration and analysis of the targeted skill in the case of questioning. Instruction with practice approaches included opportunities for practice, with feedback on the targeted skills. The results of the study were somewhat surprising since the hypothesis that training incorporating both instructional and practice methods (i.e., instruction/practice) results in a significantly greater mean effect size than training based on instructional methods alone was not supported. Also the hypothesis concerning temporal variables, namely, that more extended general and specific training times result in a significantly greater mean effect size, was not supported. However, the major hypothesis that training results in a significant difference between the means of experimental and control groups was confirmed.

*b) Weaknesses and Limitations*

As mentioned earlier, despite the fact that the CBA was promoted as the most effective approach to prepare and develop teachers and was nominally employed for several years, it was criticised in relation to a number of issues by several researchers (e.g., Carr, 1993; Cowen, 2002; Houston, 1988; Humes, 1995; Korthagen, 2004; Stephens, Tonnessen, & Kyriacou, 2004). In particular, to ensure sufficient validity and reliability in the assessment of the teachers, the long detailed lists of skills which were formulated gradually resulted in a kind of fragmentation of the teacher's role. Thus it was becoming increasingly apparent that this view of teaching took insufficient account of the fact that a good teacher cannot simply be described in terms of isolated competences, which can be learned in a number of training sessions. In addition, these long lists proved to be extremely unwieldy in practice. The main point is that there are too many isolated skills, which cannot be covered thoroughly no matter how long the training programme is, while at the same time doubts have been raised about the validity, reliability and practicality of such lists of individual competences.

A similar issue is reported by Wragg (1993) in relation to the Leverhulme primary project. In this project the research team concentrated on skills, such as management of pupils' behaviour and work, questioning and explaining, and on teacher subject knowledge. As the author argues, the issue of teacher competence raises several important questions, one of the most significant of which is related to the extent to which these skills should be learned in part or as a whole. The extreme partial-learning stance is taken by some supporters of competency-based teacher education who believe that teaching can be atomised into hundreds of discrete mini-actions which can be systematically learned and appraised. At the heart of

these concerns is a belief that teaching cannot be deconstructed into a number of discrete and separately identifiable parts in the form of competence statements, and indeed many researchers question whether it is actually possible to describe the qualities of good teachers in terms of isolated competencies (e.g., Barnett, 1994; Hyland, 1994). As Korthagen (2004) argues, trying to put the essential qualities of a good teacher into words is a difficult undertaking. In expressing his concerns about such fragmentation, Halliday (1996) claims that no series of statements can allow for the multitude of reactions, interactions and behaviours typical of every teaching encounter. Similarly, Lyle (1996) warns of hastening ‘the transition from teaching as a profession to teaching as a set of technical competences’ (p. 11).

In addition, the rather mechanistic procedure for implementing the prescribed directions for each kind of teaching behaviour does not allow the critical and creative thinking of teachers to be expanded nor is this taken into consideration in the delivery of such programmes. Much of the literature focuses on the narrowness of its approach and its failure to address certain important aspects of professional practice, such as theoretical knowledge and understanding (e.g., Ashworth, 1992), the ethical principles which underpin practice (Chown, 1996), and the ability to make autonomous and pragmatic judgments (Chown, 1996; Elliot, 1996). As Chown (1996) argues, ‘The CBA seems unable to cope with the fact that a vital part of teaching is the complex process through which teachers draw on different types of knowledge from a range of domains and decide what to do in rapidly changing unpredictable circumstances’ (p. 143).

Although promoting specific competences through the CBA is often associated with rhetoric about greater teacher professionalism, misgivings have been expressed about the effects of those competences expressed as standards on professional autonomy and their limited range. For example, Tickle (2001), writing about the original English induction standards, was concerned that they reflected too narrow a view of teacher expertise and that their use would lead to induction and professional development becoming assessment- rather than development-led. For Stephens et al. (2004, p.113), the CBA ‘fails to take account of what Duncan (1998) calls the messy kind of wisdom: teacher knowledge that can only be acquired in practice and through personal experimentation’. It is argued that lecturers and education managers should be entitled to a more professional and academic training if they are to deal effectively with the increasingly complex situations they face. From this perspective, there has been a shift from an emphasis on the courses taken to a ‘results-oriented’ conception of education in which observable performances and practical knowledge are valued (Delandshere & Arens, 2001, p. 557). There is an assumption here that theoretical knowledge is a prerequisite of performance and that all important knowledge can be evidenced through performance or activity. Equating knowledge and performance seems to assume that knowledge is always enacted, thereby devaluing those forms of knowledge that

are not; it also disregards the activities that one engages in to develop knowledge, which, in the case of teaching, are the activities that inform us most about how and why knowledge develops. This shift to performance has the potential to focus on the most visible aspects of teaching but not necessarily the most important ones (Delandshere & Arens, 2001).

The failure of competency-based qualifications to engage with these more complex aspects of teaching has largely been explained, according to Elliot (1996), by their 'pre-occupation with observable phenomena' (p. 21) and the assumption that all knowledge can be observed and assessed while in use. As Sprinthall et al., (1996) argue, because the CBA is drawn from behavioural psychology and the cognitive-load theory, there is little consideration given to change in teacher cognitions or the cognitive developmental dispositions of the teachers in training. Instead the assumption is linear and quantitative. Teach each skill as effectively as possible and the teachers will follow and incorporate the skill in their teaching.

Furthermore, the specific educational context or the professional priorities and needs of the participating teachers are not taken into consideration, something that may reduce the interest and affect the will and the efforts of the participants to engage in their improvement plans. As Lowyck (1978, p. 215) stresses, 'Teaching behavior can only be understood and improved when the original context of the specific teaching behavior is included in the interpretation'. A similar argument has been raised by Trorey (2002). She argues that national priorities for teacher development, expressed as isolated teaching competences, create many tensions as they may imply that the specific developmental needs of a school or teachers remain unaddressed. As Brooks (2002) argues, 'There is little evidence that professional development programs were consistently successful in ensuring that both individual and institutional needs were met' (p. 36).

It has also been argued that in addition to failing to capture the complexity of the teachers' work, competency-based training and qualifications have served to push forward system and/or institutional objectives at the expense of the individual needs of staff. Taking this argument further, Edwards and Usher (1994) suggest that competency-based professional development programmes are a way of imposing self-discipline and self-regulation on individuals so that they conform to what is required. Similarly, Bathmaker (2000) argues that competences stated as standards 'might offer an easy way to meet institutional monitoring and assessment requirements[...]but fail to stimulate the development of imaginative and creative professionals who can be flexible and responsive in a rapidly changing environment' (p. 19). In the same line of argument, issues related to the erosion of teachers' professional autonomy may be also raised. Although policy documents (e.g., DfEE, 2000) state that teachers and schools are best placed to know what development activities could meet their particular needs and raise standards of teaching and learning in their school, such professional responsibility is confined to the means of achieving the outcomes, to the isolated skills and competences and

not to the deliberation over the educational values and purposes themselves. As Faulkner, Freedland and Fisher (1999) argue, there was to be, and is, little scope for professional judgment in the establishment of standards or targets as the main responsibility lies in the hand of central government and policy-makers, irrespective of individual teacher needs. Patrick, Forde and McPhee (2003) argue that by conceptualising teaching in simplistic terms as a set of measurable outcomes, the framework of teacher professional development could undermine the autonomy and professionalism which it claims to enhance. On the other hand, others argue that detailed analysis of the relevant skills and competences and the related evaluation systems, enhances rather than diminishes the professional nature and stature of teachers (e.g., Odden & Kelley, 1997). The competent teacher might be said to be more professional than the incompetent one, but at the same time this might be a rather limited notion of what it means to be a professional. Likewise, others see in a framework of standards both a potential threat to the autonomy of teachers and also an opportunity to re-professionalise (e.g., Storey & Hutchinson, 2001).

Beyond the discussion relating to the opportunities and strengths and despite the extensive rhetoric, publications and discussions concerning the CBA, almost no basic definitive research has been conducted to prove or disprove its effectiveness. Certainly, short-term research has shown that student achievement does improve, as a meta-analysis by Walberg (1986) has documented. However, the long-term results are less positive. Richardson and Anders (1994) note that there is a real paucity of research on the follow-up effects of the competency-based training. According to Sprinthall et al., (1996) the best-known programme using the CBA has been the Madeline Hunter approach, which includes a series of highly explicit steps in the classroom. Even though the training was comprehensive, expensive and focused on a relatively small number of teachers, the results suggested extremely modest outcomes in terms of student achievement. Although Hunter has always maintained the need for teacher flexibility with regard to how the methods are applied in the classroom, yet the training itself may not encourage such teacher flexibility. In this context, given the growing official interest in competency-based approaches, those responsible for teacher training and professional development can expect to come under increasing pressure to explore the extent to which the use of competences can enhance the effectiveness of teacher education and the overall quality of teaching. However, the advantages of using the CBA still remain to be proven. There is certainly insufficient experience to date to justify the national imposition of any particular approach, but there is considerable scope for further exploration and evaluation of the range of approaches that are currently being developed (Whitty & Willmott, 1991). Today, the factors influencing quality of teaching require sufficient levels of skill, understanding, flexibility and reflection on the part of teachers, which go far beyond the rudimentary CBA and training in isolated teaching skills in teacher training and professional

development programmes (Wragg, 1993). Thus in the next part the holistic or reflective approach to teacher training and professional development is described, which often claims to be the very antithesis of the CBA to teacher training and professional development.

## **IMPROVING OF TEACHING THROUGH CRITICAL REFLECTION: The Holistic Approach**

---

The dominant approach to teacher training and professional development nowadays is that of holistic or reflective practice (Golby & Viant, 2007). Teacher educators have been preoccupied by what Smyth (1992) calls an ‘inexplicable wave of enthusiasm’ (p. 268) for reflective approaches. Fifty years after Dewey’s differentiation between *routine action* and *reflective action*, the terms ‘reflection’, ‘reflective practice’ and ‘reflective practitioners’ abound in the literature of teacher education and professional development (see Admiraal & Wubbels, 2005; Birmingham, 2004; Loughran, 2002; Rodgers, 2002). This approach has also been described as a reaction against more centralised policy perspectives in teacher training and professional development which regard teachers as technicians, a view promoted by the CBA (Copeland, 1991) described in the previous section. The term has been used to refer to widely differing practices, ranging from reflection as a component of skill and a means of fostering effective teaching, to reflection as a heightening of awareness of social justice in educational practice. At the same time the holistic nature of this approach refers to the rather general, or even vague, content of teacher reflection, which may include all skills, attitudes, perceptions, motivation and moral disposition related to teaching and learning (Cruickshank & Metcalf, 1990; Feiman-Nemser, 1990). This section provides an overview of the HA to teacher training and professional development and discusses its main strengths and weaknesses.

### ***Definition and Main Characteristics***

Influenced mainly by these three lines of inquiry, a number of teacher educators have written extensively on the topic and reflection has been advanced as an ideal in numerous teacher education and professional development programmes. Clift, Houston and Pugach (1990) have summarised a number of teacher education and professional development programmes that feature reflection and Tom (1985) has mapped out some of the crucial parameters of an inquiry-oriented approach to teacher education. Likewise, Calderhead (1989) has examined the various definitions of reflective teaching and argued that teacher development, teacher knowledge and the context of teacher learning have great potential in terms of extending our understanding of the role of reflection in teacher education and professional development. In addition, Korthagen (1988), drawing on the developmental model, suggests that teachers differ in their learning orientation. Some with an internal orientation view learning and reflection as an exciting and self-guided process. They readily examine their own practice. Others with external orientations require a high degree of structure from instructors and conform to peers’ views of teaching.

However, despite the extensive writing on the HA, and the importance of reflection for teacher improvement, defining what actually constitutes reflective teaching or reflective practice is fraught with difficulty, and this major problem of definition has been recognised for some very considerable period of time (see Calderhead, 1989; Hatton & Smith, 1995; Tom, 1985). While the concept of reflection in education is not new and much of the writing about reflection employs the work of Dewey (1933) as a reference point (e.g., Adler, 1991, 1990; Calderhead, 1989; Farrah, 1988; Gilson, 1989), the vague nature of the concept, as expressed in Dewey's writing, has not been resolved. As Cornford (2002) argues, the ideals or purposes of reflection in education are as manifold as the term itself: development of self-monitoring teachers, teachers as experimenters, teachers as researchers, teachers as inquirers etc. An analysis of the literature reveals a plethora of words associated with the concept of reflection, each of which, as Adler (1990, 1991) suggests, is embedded in and reflects a different discourse (see Smith & Hatton, 1992a for a full analysis of these terms). At base, it is not always clear whether reflection is conceptualised as an exclusively cognitive activity (as a special type of thinking) or what exactly constitutes its relationship to ongoing, past or future events (Ottesen, 2007). The concept has been described in several ways, drawing variously upon the writing of Dewey (1933) on modes of reasoning, Schon (1983) on professional thinking, Stenhouse (1975) on teachers as researchers, recent theories of cognition in cognitive science (see Borko, 1988) and critical theory (see Elliot, 1987).

The definitions of reflective teaching, as mentioned above, have varied both in terms of their conception of the nature of reflective activity and, most importantly, on the content on which teachers are expected to reflect (see Calderhead, 1989). For example, Schon's (1983) notion of *reflection-in-action* refers to the ways in which professionals identify and solve problems through the consideration of alternative modes of framing or viewing a professional situation or problem. It describes the problem-finding and problem-solving processes involved in professional action. On the other hand, Zeichner and Liston (1987) take a broader view of reflection, derived largely from the *philosophy of action*, as the active, persistent and careful consideration by teachers of the origins, purposes and consequences of their actions.

Different conceptions and definitions of holistic or reflective practice seem to have channelled teacher educators into drawing upon specific areas of research to inform their ideas of reflection and also to provide methods, such as narratives and journal writing, stimulated recall, action research and ethnographies, that might be transposed from a research to a practice setting. For example, the *Maryland Reflective Teacher Education Program*, described by McCaleb, Borko and Arends (1992), views reflection primarily in terms of evaluation skills and draws on research on teaching, and especially teacher thinking, in the programme as a means of increasing teachers' repertoire of concepts that can be used in analysis and evaluation. Ross, Johnson and Smith's (1992) account of the *Florida Reflective*

*Teacher Education Program*, on the other hand, views reflection in terms of personal and professional growth and adopts a series of processes to promote teachers' examination of their own educational values and beliefs.

In terms of the strategies used to implement and stimulate the holistic or reflective approach, either in initial or in-service teacher training, five broad approaches can be identified (Smith & Hatton, 1992a). These include: action research (Gore & Zeichner, 1991; Ross, 1989; Smith & Lovatt, 1991; Sparks-Langer & Colton, 1991), case studies of students, teachers, classrooms and schools (Ross, 1989; Sparks, 1991; Zeichner, 1986), field experiences and practicums (Sparks-Langer & Colton, 1991; Zeichner, 1986), microteaching (Cruickshank, 1985) and other tasks, including the development of curriculum units and their implementation (Ben Peretz, 1984; Beyer, 1984; Smith, 1991a; 1991b; Zeichner, 1986). All of these approaches generally comprise the reflective strategies of observation, analysis, interpretation and decision-making (Duckworth, 1987; Richardson, 1989; Zeichner & Liston, 1987).

In addition, Zeichner (1987) has reviewed instructional strategies that can be employed in pre-service teacher education and in-service professional development programmes to enhance teacher reflection. Among such strategies are action research, ethnography, writing, supervisory approaches and curriculum analysis and development. In practice, these approaches usually involve making use of reading and rereading of journal writing, observation notes, transcribed conversations, videotaped analyses, self-regulations etc. In particular, journal writing is commonly used to attempt to facilitate reflection. Such writing is by its definition and structure *reflective-on-action* and is more likely to exhibit characteristics of the genre of reflection utilised by teachers. There are still issues, however, related to the audience of the writing and the degree to which it is private or public, which also confound its usefulness as evidence for reflection. Moreover, the analysis of, and discussion on, critical incidents is also a useful element of reflective practices. A critical incident is not an extreme case, but any professional experience which offers significant meaning (e.g., a discussion with a student, a meeting with parents etc.).

According to Chater (2007), all strategies, practices and activities of a reflective practitioner could be categorised into the micro, the meso and the macro levels: the micro level includes those characteristics that function at classroom level and make an impact on the school (i.e., playgrounds, corridors); the meso level includes those that operate at the school level but can impact upon other schools in a consortium, community or region; and the macro level which includes those that operate at regional and national levels, where they influence schools and classrooms. At the micro level (i.e., reflective practice in a teacher's mind as it affects classrooms and schools) reflective teachers could perform frequent and thoughtful self-evaluation on the quality and the process of their own teaching. Of course, evaluation is



not always a self-contained activity. In a collaborative, critical-friend model of evaluation, Campbell, Kyriakides, Muijs and Robinson (2004), suggest that peers can challenge and support each other through listening, asking questions, articulating each other's beliefs and aspirations about teaching and giving feedback. In doing this, Smyth (1991, p. 13) recommends the use of the following four questions: (a) *Describe*: What do I do? (b) *Inform*: What does this description mean? (c) *Confront*: How did I come to be like this? (d) *Reconstruct*: How might I do things differently? Based on the above strategies and activities, teacher training and professional development involves more than just the acquisition of the theory of teaching. Implicit or explicit in all the writings that focus upon reflective teaching (other than the extreme position of theorists concerned solely with the personal development of the individual), is the idea that increased reflection will translate into action and result in improvement in teaching and learning (Cornford, 2002).

There is a general support for the view that teachers' beliefs about teaching which are based on previous experience and perceptions of education have a significant influence on learning to teach and improvement in teaching (Cole & Knowles, 1993; Elliot & Calderhead, 1995). Existing knowledge, experience and beliefs need to be recognised and challenged in order to support teachers in reconstructing and developing them appropriately in the light of new ideas and experiences. Challenging teachers' constructs of teaching is an ongoing process of moving their learning on throughout their professional development. Thus it is argued that it is in the nature of reflective practice that the context, as defined by the learning needs of teachers, other professionals, pupils and their families, must be taken into consideration as it is one of the decisive factors contributing to the quality of reflective practice.

### ***Strengths and Weaknesses***

The HA, through teacher reflection, is generally assumed to promote understanding and insight and to have transformation or empowerment as its purpose or effect. Thus many argue that reflection should be a standard professional disposition for all teachers helping them to understand the complex nature of classrooms (Feiman-Nemser, 1990; Zeichner & Liston, 1996). This section provides an overview of the main strengths and weaknesses of this approach.

#### *a) Strengths and Advantages*

A widely accepted strength of the reflective approach is that reflection enables practitioners to analyse, discuss, evaluate, and change their own practice, adopting an analytical approach towards their teaching skills. It also encourages them to appraise the moral and ethical factors implicit in classroom practices, including the critical examination of their own beliefs about

good teaching. Through reflective practice, teachers may reinterpret and reframe their experiences from a different perspective and participate consciously and creatively in their own growth and development (Munby & Russell, 1990). In addition, the reflective approach may encourage teachers to take greater responsibility for their own professional growth and to seek ways of acquiring some degree of professional autonomy. It may also help them develop their own theories and empowers them to take a more active role in educational decision-making.

For example, a key finding in a study conducted by Scott and Dinham (2002) was that teachers had, either on their own or with a mentor or other colleagues, reflected on and identified their professional strengths and weaknesses. They had then formulated, either formally or informally, a personal action plan to meet their professional needs, and had taken steps to put this plan into action. However, in planning to meet these needs, these teachers gave a low priority to formal employer-led professional development initiatives, as they considered them to be unrelated to their priorities for improvement. A sample of secondary heads of department in another study had similar views (Dinham et al., 2000). Generally, educational systems are perceived by teachers to provide various training packages which are often generic in nature, covering areas such as leadership, school management, child protection and other mandatory requirements. However, both teachers and school managers showed a clear preference for professional development which was focused on their subject discipline and area of teaching and tailored to meet their needs. In this context, professional development provided by educational systems was frequently concerned with current priorities which were more to do with systems, school administration and policy rather than actual teaching practice.

Moreover, according to Day (2002), there are three reasons why reflective practice is increasingly being recognised as essential to good teaching and playing a central role in the professional life of the effective teacher. The first concerns the nature of teaching. The assumption is that since teaching and learning are complex processes and since there is not necessarily one right approach (Loughran, 1996), deliberating about competing versions of good teaching and recasting past understandings and current practices (Grimmett, MacKinnon, Erickson, & Riecken, 1990) are likely to lead to improvement. Although we agree that there is no one right approach to teaching, we could argue at this point that, drawing on the EER, there are specific teaching skills identified as having an impact on student achievement. If we ignore this, then efforts at improvement might lose their focus and scope. From this perspective, we consider teaching not only as an art but also as a science with a particular knowledge base and empirical evidence to be taken into consideration. Without the capacity to evaluate assumptions, teachers will not be able to improve further.

The second is that engaging in reflective practice is a means of helping individuals towards gaining greater self-knowledge and the ability to challenge themselves, which are in turn considered to be useful ways to achieve personal development (Johnston & Badley, 1996) through an analysis of the personal values and theories that underlie teaching. Finally, the third reason, according to Day (2002), is related to the idea that reflective practice considered to be central to the growth of teachers as inquirers who engage in collaborative research with others from both inside and outside the school, generating knowledge of practice rather than regarding themselves as objects whose role is to implement existing theory in their practice.

Taking this argument further, Forde, McMahon, McPhee and Patrick (2006) argue that teachers need to forge new professional identities in order to reclaim ownership of their profession. The authors suggest that the way to achieve this is through professional development, reflection and enquiry. The forging of new identities is a critical process within approaches to professional development since it is important to enable teachers to reflect on, and to create, new practices which best serve the learning needs of their students. The authors also argue that these new practices should centre on an increased sense of teacher agency and ownership of the profession. Most professional development programmes do not appear to be based upon a recognition of the complexity of teaching, nor do they demonstrate a commitment to supporting teachers' *moral purposes* (Sockett, 1993) as an essential part of their professionalism or recognise the *emotional labour* (Hochschild, 1993) and *emotional intelligence* (Goleman, 1995) which are fundamental parts of the teaching process. As Hargreaves (1997, p. 12) argues, 'good teaching is not just a matter of being efficient, developing competence, mastering technique, and possessing the right kind of knowledge. Good teaching also involves emotional work. It is infused with pleasure, passion, creativity, challenge and joy [...] it is a passionate vocation'. Although we accept Hargreaves's argument, at the same time we do not approve the extent to which such aspects of teaching are over-emphasised, whereas other scientific aspects of teaching are being underestimated or even ignored. As has been mentioned earlier, research findings have revealed that specific teaching skills have an impact on student achievement. Our argument is that such knowledge should not be ignored, especially with respect to our efforts to improve student learning. However, as many argue (e.g., Bierman et al., 2008; Buczynski & Hansen, 2010; Domitrovich et al., 2009; Sprinthall et al., 1996; Yoon et al., 2007), it is crucial to move beyond the theoretical discussions about the merits of reflection to actually investigating the impact of such approaches on teaching and learning, and identifying possible limitations.

### *b) Weaknesses and Limitations*

The main criticism has been that the holistic or reflective approach lacks a grounded theoretical foundation on the basis of which specific teaching skills could be developed. In other words, this approach seems to neglect research findings related to what constitutes effective teaching and is based on the assumption that reflective practitioners can improve solely by virtue of their own critical thinking and reflection on their past experiences. Nevertheless, teachers do not always learn from experience and that experience itself can be limiting in terms of their development (Britzman, 1991). In addition, while there are increasing demands on teachers to become more reflective, there have been few studies of practical strategies to facilitate such reflection and even fewer investigations of the impact of various strategies upon the development of reflective practices. Most importantly, there appears to be little, if any, evidence in the published literature that assisting teachers to become reflective without providing them with a framework to meet their personal needs and priorities for improvement necessarily makes their practice more effective (Smith & Hatton, 1992b).

Consequently, another major weakness of the HA is related to the vagueness of its content. Despite the considerable emphasis on promoting reflection in teachers, it is not always clear exactly what teachers are supposed to reflect upon when they wish to become better teachers (Cornford, 2002). The general or even vague nature of reflective approaches has been noted by Cruickshank and Metcalf (1990) when they argue that all of these approaches are 'intended to prepare teachers to become more thoughtful' (p. 485). According to earlier studies, reflection must be broad and deep in order to be productive (Luttenberg & Bergen, 2008). Breadth refers to the content of teachers' reflections, which may be restricted to a narrow area of their teaching activity or may involve many different aspects. Furthermore, reflection is considered broad if it is both internally and externally oriented (Korthagen, 2001), or if both the past and the future are considered (Conway, 2001). Reflection is also broad if it pays attention to personal, cognitive or moral dimensions (Harrington, Quinn-Leering, & Hodson, 1996), or if it refers to social, cultural and political conditions of teaching (Dinkelmann, 2000; Noddings, 1995).

In addition, teacher educators supporting reflective teaching have generally employed research selectively to illustrate or support their standpoints or provide a methodology for teacher education and professional development. For example, work on narrative and journal writing has been used to justify reflective practices in some programmes and also to provide a methodology. However, the use of such approaches in teacher education and professional development itself raises many questions that require exploration in order to expand our understanding of the developmental process. For instance, how journal writing contributes to

students' professional development has not been investigated thoroughly. Both for teacher professional development and for research, it is important to pursue these questions so that the processes and particular activities of professional development under the HA are more fully understood.

Another major criticism of the HA is that although reflection is high on the agenda of teacher education and professional development, it has often not been connected with practice (Kaasila & Lauriala, 2012). Similarly, in terms of adult learning theory, Johnston and Usher (1996) have challenged the relevance of reflective practice as articulated by Boud, Cohen and Walker (1993) on the grounds that such reflection separates theory and practice. We are all likely to have encountered less effective teachers who are particularly adroit at reflecting; they are able to give cogent and superficially acceptable accounts of their practice and to justify their behaviour in the classroom. In other words, there are teachers who are excellent at reflecting on their practice but whose execution is very unsatisfactory. As McNamara (1990) argues, it is comparatively straightforward, indeed routine, for some teachers to offer critical and reflective analyses of teaching in their formal written assignments and to engage in lively critical talk about practice in non-teaching situations (such as tutorials when stimulated by video transcripts), but their transfer of these mental capacities to their actual teaching is problematic. It is difficult to promote reflective teaching among teachers which goes beyond academic tokenism and actually leads them to modify their behaviour and teach differently and more effectively. Although much has been written about teachers' need to reflect, reflection without action can be sterile (Wragg, 1993).

In this context, the relation between reflection and action remains complicated (Boud et al., 1993; Kaasila & Lauriala, 2012; McNamara, 1990). Teacher behaviour cannot be comprehended completely by understanding its subjective meaning for the person involved (Kelchtermans, 1993). As Argyris and Schon (1978) put it there is a difference between *espoused theory* and *theory in use*. Teacher professional behaviour is determined to a great extent, according to those supporting reflection, by the *theories of action*. Through reflection this theory can be thematised and made more explicit, which then could lead to the *espoused theory*. But what people say they do and why often differs from the *theory in use*, the *theory of action* that can be inferred interpretatively by observing the actual behaviour of teachers at schools.

Although reflection has been very fashionable in all sectors of teacher education, including vocational and adult education, for a number of years, there is little solid empirical evidence that supports the view that it results in superior teaching practices (Cornford, 2002; McNamara, 1990). One might have anticipated that there would have been concerted efforts to evaluate the practical effectiveness of these various approaches to reflection by means of empirical methods and through these, the ideological positions that such approaches

represent, but this has not occurred to any appreciable degree. In addition, it should be acknowledged that there has been pertinent, carefully reasoned criticism of reflective teaching in a number of published sources (e.g., Gillis, 1988; Shulman, 1988), but this does not seem to have dented the enthusiasm in any way.

The results from the few published empirical studies that have attempted to quantify the effects of reflective thinking programmes upon teachers' thought and classroom performance have not managed to provide sound support for the impact of this approach. Chandler, Robinson and Noyes (1991) found that reflection is not significantly related to teaching performance. Wubbels and Korthagen (1990), comparing teachers who had graduated, both recently and some time before, from conventional colleges and colleges implementing reflective teaching programmes, found no differences between the two groups in their attitude to reflection and inclination towards innovation. Moreover, research by Winitzky and Arends (1991) indicated that it is possible to develop schemas approximating those of expert teachers using reflective methods, but they found no statistically significant differences between the experimental and control groups regarding knowledge or performance. While there is some evidence that the HA in some studies can produce greater ability to verbalise (Stoiber, 1991; Winitzky & Arends, 1991), there is no clear evidence that this can be carried through into superior practical teaching performance. Overall, as Cornford (2002) argues, there is a strong tendency for studies assessing the efficacy of reflective teaching to reveal equivalence between reflective treatment and control groups on a range of measures.

In this context, there is a failure to compare experimentally the different reflection paradigms and the results from the implementation of these. At the same time it is acknowledged that numerous qualitative or case studies on reflective practice have been widely disseminated through publication (see Kagan, 1992). Many of these have reported the enthusiasm of trainee teachers and lecturers using reflective approaches and/or have explored methods or processes encouraging reflection in student teachers. In addition, there have been many articles on reflection that have attempted to categorise the diversity of views on the essential nature of reflective practices in teaching into some neat taxonomy, either on the basis of underlying philosophy or types of processes employed to achieve objectives (e.g., Copeland, Birmingham, De La Cruz, & Lewin, 1993; Hatton & Smith, 1995; Tom, 1985). These articles attempting categorisation do not appear to have resulted in further agreement or a greater inclination to examine the differential effectiveness of different paradigms or processes when they are implemented. The question that still remains to be answered is related to what are important aspects of reflection which can facilitate teacher development and improvement in the quality of teaching (Cornford, 2002; Cruickshank & Metcalf, 1990; Smith & Hatton, 1992b).

### ***Conclusions about the two dominant approaches to teacher training and professional development***

The two previous sections have provided a description of the two dominant approaches to teacher training and professional development and reveal that they both have not only strengths, but also weaknesses. In particular, the CBA is concerned with specific knowledge and isolated skills that teachers should possess, and training programmes are organised in units which each relate to individual and particular teaching skills and pieces of knowledge (Burke, 1989). However, this approach led to the development of lists containing too many isolated teaching skills, all of which had to be taught in corresponding courses, something which gave rise to doubts about the feasibility and practicability of this approach. In addition, the long detailed lists of teaching skills could gradually have resulted in a kind of fragmentation of the teacher's role. Moreover, it has become increasingly apparent that this view of teaching takes insufficient account of the fact that a good teacher cannot simply be described in terms of isolated competencies, which could be learned over the course of a number of training sessions (Korthagen, 2004). On the other hand, the HA gives a much broader view of what teachers should know and expects that increased reflection on experience and beliefs will translate into action which will eventually result in improvements in teaching and learning (Cornford, 2002). However, a number of problems have been recognised that are associated with the development of the HA in teacher education and professional development. Among others, the content of reflection is not always clearly defined, nor is the whole procedure always associated with teaching practice and action for improvement (Elbaz, 1988; Zeichner, 1990), something which creates doubts in relation to the potential of reflection to improve teaching practice. As previously explained, improvement in teaching as a result of reflection is the main assumption underlying the HA. However, we argue that this assumption needs to be tested through systematic research in order to discover the other essential characteristics of reflection that could facilitate improvement in teaching and learning.

In particular, in terms of empirical justification, there is little solid evidence that supports the view that the reflective approach results in superior teaching practices (Cornford, 2002; McNamara, 1990). Similarly, although some studies show that the CBA may have positive short-term effects on improving teaching practice, doubts could be raised about the long-term effects of defining teaching and improving teacher knowledge and skills. There is so far no definite answer as to which is the most effective teacher professional development approach that should be used in order to improve quality of teaching and student attainment. As Garet et al. (2001) argue, although there is a large body of literature on professional development, surprisingly little attention has been paid to the actual content of the professional development activities. The same issue has been reported by Wragg (1993) in

relation to the content of the Leverhulme primary project, in which, he argues, one of the most important issues was the extent to which teaching skills should be learned in part or as a whole, 'The extreme part-learning stance is taken by some supporters of the competency-based teacher education who believe that the teaching can be atomized into hundreds of discrete mini-acts which can be systematically learned and appraised. On the other hand, the extreme holistic stance is adopted by those who contend that teaching is an art, and that to seek to segment it is to destroy it' (p. 192).

Nevertheless, we may have to guard ourselves against confining the discussion to this classical dichotomy in teacher training and professional development. In order to overcome the disadvantages of the two dominant approaches, an integrated approach is needed. This approach, sited between the two dominant ones and utilizing key elements from both, could help us overcome their main disadvantages.



## **CHARACTERISTICS OF EFFECTIVE TEACHER TRAINING AND PROFESSIONAL DEVELOPMENT PROGRAMMES:**

### **A Dynamic Approach To Teacher Professional Development**

Research on teacher training and EER have been conducted apart from, and without much reference to, one another. Few researchers examining teacher training methods rationalise their selection of teaching skills in terms of EER and very few evaluate the impact of teacher professional development on student learning. At the same time, investigators of teacher effectiveness spend little time speculating about the methods that may be used to improve teaching practice. In addition, the field of teacher professional development has been dominated by two different and rather opposing approaches: the competency-based approach and the reflective approach. These two approaches have been described in Chapters. 2 and 3 of this handbook, respectively, and their strengths and weaknesses were discussed. In this chapter, it is argued that we should guard ourselves against narrowing down the discussion to this classical dichotomy related to content and develop an integrated approach to teacher professional development that will focus on improving the grouping of factors associated with teacher behaviour in the classroom (Creemers, Kyriakides, & Antoniou, 2013). For this purpose, not only should reflection and understanding of practice be encouraged, but research on teacher effectiveness (TER) should also be taken into account. In this context, the dynamic model of educational effectiveness has been developed in order to establish links between EER and improvement of practice (Creemers & Kyriakides, 2008) and a Dynamic Integrated Approach (DIA) to teacher professional development is described.

More specifically, based on reviews of teacher training and professional development programmes (Blank & de las Alas, 2009; Borko, Jacobs, & Koellner 2010; Clewell, Campbell, & Perlman, 2004; Desimone, 2009; Hawley & Valli, 1999; Kennedy, 1998; Timperley, Wilson, Barrar, & Fung, 2007; Van Veen, Zwart, & Meirink, 2011), this section provides a description of the main characteristics on which effective teacher professional development programmes should be based. In addition, direct or indirect reference is made to key elements of merging the two dominant approaches. In this context, in the first part of this chapter we describe the main characteristics of effective teacher professional development programmes and in the second part we refer to the use of a dynamic approach to teacher professional development.

#### ***Characteristics of teacher professional development programmes***

The research findings have revealed that professional development is more effective if the teacher has an active role in constructing knowledge (*teacher as action researcher*), collaborates with colleagues (*collective critical reflection*), the content relates to, and is

situated in, the daily teaching practice (*emphasis on teaching skills*), the content is differentiated to meet individual developmental needs (*linked with formative evaluation results*), and the possibilities and limitations of the workplace are taken into account. These characteristics are further elaborated below and their implications for developing teacher training and professional development programmes are also discussed.

**1) The content of the programme should have a clear focus on specific skills which are linked to the daily teaching and have been found to be positively related to student progress**

As with all skill learning, regardless of whether it involves performance skills or cognitive skills, there is a need for programmes that help participants to acquire the desired skills (Cornford, 1996). We argue that we need to stop assuming that all teachers are in possession of effective cognitive skills, which will enable them to develop their teaching skills naturally and without the need for teaching and learning which addresses their specific needs in terms of developing teaching skills and competences. This attempt is supported by Desimone, Porter, Garet, Yoon and Birman (2002), arguing that focusing on specific teaching practices in professional development increases teachers' use of those practices in the classroom and thus students' learning. That is not to deny in any way that thinking and critical analysis are important. The issue is how to encourage such critical thinking, while at the same time building a solid foundation of teaching skills, validated by research findings and connected to student outcomes, which have been neglected in the holistic-reflective paradigm.

Nevertheless, the selection of these skills and practices is also crucial as teachers or teacher professional development programmes administrators, in their efforts to bring about improvement, have an infinite number of possible alternatives on which to concentrate their focus and actions. Justifications for the particular competences selected also seem to vary, while there is often a lack of clarity about the relationship between different types of competence (Whitty & Willmott, 1991). As Hayes (1997, p. 170) argues, 'We need to be clear about how we define competence; whether it is right to speak of one competence, two competences, three competences etc.' Although the specific competences employed in course design can be derived from a variety of sources, such as the various task analyses of teaching, attempts to specify the attributes of the teacher as professional or even competences specified by external agencies, we need to be in a position to justify this selection on the basis of research findings. This is why we need to develop or utilise validated theoretical frameworks, drawing on EER, which could guide teacher educators by focusing on groups of teaching skills that have been found to be related to student learning, while at the same time facilitating teachers' attempts to improve the skills they most need to enhance their effectiveness (Whitty & Willmott, 1991; Sharpe, 1997). From this perspective, it is argued that results from

validated models of educational effectiveness, describing teacher behaviour and skills that have been found to have a positive effect upon student outcomes, should be utilised in defining the content of teacher professional development programmes. This argument is further elaborated by describing the dynamic approach to teacher training and professional development.

**2) The content of the training programme should be differentiated so as to meet the participants' different priorities for improvement and to address contextual issues influencing quality of teaching**

The use of a valid framework, as mentioned above, on the basis of which the content of the training programme is to be selected and formulated, cannot in itself ensure that the programme will be effective and will improve the quality of teaching of all participating teachers. We also argue that not only should a theory-driven approach be followed to improve quality of teaching, but emphasis should also be placed on collecting data in order to identify the teaching needs and priorities for improvement for different groups of participants, thereby facilitating the design of relevant improvement efforts with differentiated content and focus.

In practice, teachers seem to consider new initiatives on their individual merits, particularly in relation to how they will benefit classroom teaching (Corkindale & Trorey, 2002). Teachers have turned away from competency-based or holistic professional development approaches, which are not seen to have ready relevance to, and application in, the classroom and are not geared to teachers' needs (Ayres et al., 2000; Dinham et al., 2000). As Scott and Dinham (2002, p. 112) argue, 'The pendulum is now swinging with quality of teaching becoming a major focus in the educational systems of many countries responding to teacher demands for professional development that matters in their everyday tasks and activities.'

Data should also be collected in relation to the context, in which the participating teachers operate. This is important, as several researchers argue (e.g., Imants & van Veen, 2010; Little, 2006; Smylie, 1995), since most professional development research hardly takes the condition of the daily workplace into account, although these conditions strongly influence the opportunities, limitations and the overall contribution of the professional development programmes. No single strategy will always work in every school, for every teacher, all of the time. Local customisation is necessary for the success of programmes of teacher learning or professional development (Fishman, Marx, Best, & Tal, 2003). Many professional development programmes customise their content and include several strategies in one intervention, for example, a workshop that supports formal learning combined with teacher coaching or planning time with colleagues. Providing continuous support while teachers are making changes, either in the form of a series of workshops or informal collegial

support, or both, is essential, since a number of recent studies suggest that the duration of professional development is related to the depth of teacher change (Shields, Marsh, & Adelman, 1998; Weiss, Montgomery, Ridgway, & Bond, 1998).

At this point, it should be acknowledged that teaching occurs in particular contexts: particular students interacting with particular teachers over particular ideas in particular circumstances. Teachers need to learn 'in and from practice' (Ball & Cohen, 1999), which allows other important components of effective professional development to occur. Firstly, it gives teachers time to collaborate with other teachers and school colleagues. Secondly, it allows more sustained learning and professional development to occur since it becomes part of the work rather than 'an additional' aspect of it. And thirdly, it allows work to be well integrated in a very meaningful, concrete way that addresses specific problems teachers have in their own classrooms. The importance of grounding teacher training and learning in ongoing practice in teachers' specific educational contexts is a necessary component of developing their expertise (Putnam & Borko, 2000).

The need to develop an evidence-based training approach is based on the assumption that different groups of teachers will have different priorities for improvement. This is also supported by research relating to the developmental stage theories of teacher progression and competence. Over the past three decades, cognitive psychology has produced a range of models of how people develop expert skills in professions such as teaching, music, law and management (e.g., Berliner, 1994; Billett, 2001; Ericsson & Smith, 1991; Hoffman, 1992; Sternberg & Ben-Zeev, 2001; Sternberg et al., 2000). Although these models vary with respect to both the number of stages that must be passed through and the nature of each stage, all have fixed sequences of stages representing successively higher levels of knowledge and skills acquisition. For instance, some empirical studies distinguish novice and expert stages in terms of extent and complexity of knowledge structures (e.g., Berliner, 1994; Carter, Cushing, Sabers, Stein, & Berliner, 1988; Chi, Feltovich, & Glaser, 1981; Feiman-Nemser & Remillard, 1996; Livingston & Borko, 1989). The theory suggested by these models holds that the teachers must pass through a number of periods or stages of development. Failure to respect the integrity of each stage and to allow sufficient time for its fulfilment will result in subsequent problems.

From this perspective, we probably need to think about the scope and sequence of teacher education experiences in the same way and with the same care that we develop scope and sequence guides for students from kindergarten to twelfth grade. Decision-making, priority-setting, and other aspects demonstrating personal control over the environment are characteristic of the developmental stage of the competent teacher, rather than that of a novice. The question that must be raised while teacher educators struggle to develop reflective practitioners, sensible decision-makers and proficient problem-solvers is whether

those are proper goals for more experienced or more effective teachers. As Hayes (1997) argues, some prioritising, ranking or grouping of teaching skills is inevitable since the successful acquisition of every single competence at the same time is unattainable, although this supported by some programmes which take the extreme position of the CBA. The research on the development of expertise suggests that we have not recognised the limitations of the novice and the potential for growth of the advanced beginner and competent teacher as we develop teacher education programmes. However, all the stages are of fundamental importance to the professional development of teachers, and educators must be capable of intervening at all stages, if they are to achieve the best possible results.

### **3) The programme should provide opportunities for active participation and engagement of the teachers and provision of feedback for each teacher**

Another core feature of effective professional development programmes concerns the opportunities provided for teachers to become actively engaged in meaningful discussion and planning, and to practise and implement the new knowledge and skills in their everyday teaching (see, for example, Lieberman, 1996; Loucks-Horsley et al., 1998). For teachers, the effectiveness of professional development initiatives depends heavily on the conditions in which opportunities for development actually result in changes in classroom practice (Christie & O'Brien, 2005). Based on evaluation evidence relating to their needs, teachers, in collaboration with the A&RTeam, need to be involved in identifying and setting their individual and more specific goals for inclusion in the programme: furthermore they should participate in choosing the content and the design of the professional development intervention that could best meet these developmental needs (Hawley & Valli, 1999). This is why a combination of teaching skills found to be positively related to student achievement should be selected, while at the same time critical reflection upon the current state of each teacher in terms of these skills should be systematically encouraged and promoted.

This is also related to the argument that teachers participating in teacher professional development programmes seek empowerment (Corkindale & Trorey, 2002). Many want to be involved in the decision-making which affects the quality of their teaching. However, staff development, as Fullan (1992) has suggested, has a history of doing things *to* teachers rather than *with* the teachers. Taking the above into consideration, we argue that effective professional development programmes should provide training based on 'active teaching' and should not be restricted only to lecturing. This will provide the participating teachers with the chance to report teaching practices and comment on them, to identify effective and non-effective teaching practices, to understand the significance of specific types of skill which correspond to their developmental stage and to comprehend how these are linked to effective

teaching and learning. From this perspective, special emphasis should be placed on teachers as action researchers.

Action research refers to the application of social science methods to practical problems of everyday teaching with the goals of contributing to theory and knowledge in education and improving teaching practice. According to Somekh (1995, p. 340), action research is designed 'to bridge the gap between research and practice, thereby striving to overcome the perceived failure of research to impact on and improve practice'. It is worth mentioning that the term was first used by Kurt Lewin in the 1940s. More recently, educators have framed action research as inquiry conducted by practitioners with the help of a consultant and/or expert. The following four characteristics have been attributed to action research: (1) it is collaborative, (2) it addresses practical classroom problems, (3) it reinforces professional development and (4) it requires a specialised structure to ensure both time and support for the research initiative.

In this context, Oja and Smulyan (1989) have examined action research as a new role taken on by teachers. Using a cognitive-developmental framework, they investigated how action research projects could transform teacher thinking, empathy and perspectives. Their Action Research on Change in Schools project (ARCS) is an extensive multicase study that analyses key elements of effective collaborative action research. They used the theory of group dynamics and adult development to explain how individual teacher researchers and groups develop. Their findings 'suggest that the type and quality of collaborative action research are dependent on the developmental stages of the teachers involved' (Oja & Smulyan, 1989, p. 136). Thus the ARCS project is yet another study that examines how a teacher's stage of development may influence his or her personal and professional development, as commented on previously in this section.

However, it is important at this stage to clarify a difference between the traditional action research approach, as has been put forward by supporters of the HA and the approach proposing an integration of the holistic with the competency-based approaches. In particular, although each teacher is treated as a professional responsible for designing his/her own action plan and implementing his/her own improvement strategies, teachers are not left alone to design and implement their strategies and actions, but are encouraged to make use of the expertise and knowledge of the A&RTeam and any other available resource within and/or outside the school. In such an integrated approach, teachers are the ones to take decisions relating to the improvement actions and tasks to be designed and implemented. By doing so, not only is ownership of the improvement effort established, but the teachers' experiences and the context of the school and classroom are also taken into account (Muijs, 2008). At the same time, the A&RTeam has an important role to play in designing teachers' improvement strategies. The A&RTeam is expected to share its expertise and knowledge with practitioners

and help them develop strategies and action plans that are in line with the relevant knowledge base of effective teaching. This element of an integrated approach to teacher professional development reveals its main difference from the traditional approaches regarding teachers as action researchers, which are based on the assumption that teachers should develop their own strategies and action plans based only on their reflections on their or other colleagues' past experiences.

From this perspective, in an integrated approach to teacher professional development, with the supervision and guidance of the A&RTeam, each teacher develops his/her own action plan to meet his/her individual needs as identified from the evaluation results, within a validated framework of teaching skills and as discussed with each participant. Important parts of an action plan are a statement of the teaching skills the teacher aims to improve, specific actions the teacher will undertake in this direction, the resources needed in order to undertake the proposed courses of action (e.g., materials, rooms, equipment) and, finally, evaluation of the whole process. In the evaluation section teachers could make use of various techniques and methods for gathering evidence of the effectiveness of their action plans, such as keeping a reflective diary. Teachers could also ask their pupils to keep diaries. As Brophy and Good (1986) argue, this enables the teacher to compare his or her experience of the situation with that of the pupils. Moreover, opportunities for active learning can take a number of forms, including the opportunity to observe expert teachers and to be observed teaching; to plan how new curriculum materials and new teaching methods will be used in the classroom; to review student work in the topic areas being covered; and to lead discussions and engage in written work (Carey & Frechtling, 1997; Darling-Hammond, 1997; Lieberman, 1996). In addition, other teachers at the school of the participating teacher could act as outside observers (e.g., critical friends or peer-coaches) in order to collect information and convey it to the teacher in a variety of ways, such as making video-recording and showing the teacher excerpts they feel to be significant, making detailed notes as they observe and using these as the basis for a short report for the teacher to read or holding informal conversations.

After the development of the teachers' initial action plans, systematic meetings at frequent time intervals should be organised. This would allow the teachers sufficient time to implement the activities included in their action plans and also to reflect on the effectiveness of these activities. Additionally, in those meetings teachers with the assistance and guidance of the A&RTeam would have the opportunity to revise and develop further their action plans, based on their own and others' experiences and on the relevant research literature. At the same time, the teachers should receive systematic feedback and more suggestions from the research team, related to their individual priorities for improvement.

**4) The programme should provide opportunities for collaboration and networking among teachers in the same school, the same class or teaching the same subject**

Another characteristic of effective professional development programmes is collective participation and learning, a feature closely related to active learning. Besides individual reflection, collective reflection can be a fruitful tool for enriching and widening a person's thinking, especially since teachers' work conditions are often claimed to support individualism and privacy. This refers to collaborations between teachers and the development of critical networks in the same school, grade or department. The underlying assumption is that the group-based management structure could utilise the accumulated experience and knowledge of the team to facilitate improvement. As Desimone (2009) argues, 'Such arrangements set up potential interaction and discourse, which can be a powerful form of teacher learning' (p. 184).

In addition, there needs to be a shared and collective responsibility on the part of the teachers for their own professional development. Research on teacher learning communities has typically explored features of professional development programmes, such as the establishment and maintenance of communication norms and trust, as well as the collaborative interactions that occur when groups of teachers work together to examine and improve their practice. This research provides evidence that 'strong professional development communities are important contributors to instructional improvement and school reform' (Little, 2002, p. 936). Grossman, Wineburg and Woolworth's (2001) insights into teacher community suggest a conceptual explanation for these findings. They argue that we cannot expect teachers to create a community of learners among students if they do not have a parallel community to nourish their own growth. Copeland et al. (1993), for instance, emphasise the social nature of reflection. The reflective content and level of thinking represent an individual's interpretation of the roles and teaching skills which are available to him or her within the particular situation and which may be generated as individual solutions to practical problems.

In this sense, individual reflection may be more like personal interpretive hypotheses. It needs to be shared and negotiated with colleagues so that teachers can reinforce one another. The sharing of reflection gives teachers the opportunity to come together in collegial groups and reflect together on their work. The underlying rationale is that collaborative efforts are more powerful and could increase an individual's sense of satisfaction and motivation. A group of teachers can meet together to identify problems, share information and determine appropriate action regarding different dimensions of teaching practice. For example, Elbaz (1988), in her experiences with teachers examining their own knowledge, initially found that 'autobiographical writing, combined with other types of writing,



work on metaphors and imagery, and group discussion, enhanced teachers' awareness of their situations' (p. 180). Later, she found that it was important for teachers to generate and exchange different views in a group process and to envisage concrete alternative courses of action if they are to become self-sustaining in the reflective process.

Nevertheless, although teachers generally welcome the opportunity to discuss ideas and materials related to their work, and conversations in professional development settings are easily fostered, discussions that support critical examination of teaching are relatively rare (Ball, 1994; McLaughlin & Talbert, 2001; Putnam & Borko, 1997; Wilson & Berne, 1999). As Britzman (1986) argued a long time ago, collaboration and collective efforts are not customary in teachers' workplaces, and to change this culture, collective action and reflection should be cultivated in teacher education and training. The improvement effort may have better results if it is to be reviewed as a whole-school process, rather than by each teacher in isolation. In this context, Zwart, Wubbels, Bergen and Bolhuis (2009) point out, in relation to peer-coaching (Joyce & Showers, 1995), the significance of a safe learning culture and collaborative climate in the school. Such conversations must occur, however, if teachers are to explore collectively ways of improving their teaching and support one another as they work to transform their practice. To foster such discussions, tutors in the teacher professional development programme must help teachers to establish trust, develop communication norms that enable critical dialogue, and maintain a balance between respecting individual community members and critically analysing issues in their teaching (Frykholm, 1998; Seago, 2004).

##### **5) The programme should last for a sufficient period of time**

Another important element of effective professional development programmes is their duration. Research has shown that on-off professional development workshops are not typically aligned with the participants' existing practices, needs and priorities for improvement and do not reliably lead to changes in classroom teaching (Loucks-Horsley et al., 1998). In addition, a number of recent studies have suggested that the duration of professional development is related to the depth of teacher change (Shields, Marsh, & Adelman, 1998; Weiss et al., 1998). Desimone (2009) supports the view that 'research shows that intellectual and pedagogical change requires professional development activities to be of sufficient duration, including both span of time over which the activity is spread and the number of hours spent in the activity' (p. 184). Depending on the type of the activity, it is not always easy to identify the optimal point of a programme's duration. Findings from the review by Yoon et al. (2007) support a duration of at least 14 hours, Desimone (2009) suggests a minimum of 20 hours, while Supovitz and Turner (2000) state that a minimum of 80 hours of training is necessary for teacher behavioural change to occur. Of course, we need

to acknowledge that identifying the optimum point in determining programme's duration is crucial, since research also indicates that too many hours of professional development can be ineffective (Telese, 2008). This principle is also in line with the stage dimension of the dynamic model. According to the stage dimension, given extended duration of a developmental programme, teachers can implement and practise the new skills more frequently and on a systematic basis throughout the school year (Creemers & Kyriakides, 2006).

In addition, issues related to the sustainability of the intervention (Desimone, 2009; Yoon et al., 2007) are important in determining its effectiveness. On-off, short-term interventions might be less effective than long-term interventions combined with sustained follow-up support, such as coaching at the work-place, follow-up sessions and the provision of continuous support for teacher networking. For example, a study by Dadds (1991) illustrates how in-service experience takes time to be incorporated into classroom practice and that, given time, it can begin to influence the thinking and practice of other teachers of the same group.

#### **6) The programme impact on teaching skills and student achievement should be evaluated**

Another conclusion drawn from the literature review is that despite the number of studies on teacher professional development, the majority of these do not measure the impact of different approaches and programmes on student learning outcomes (Cochran-Smith & Zeichner, 2005). Few rigorous studies have addressed the effect of professional development on student achievement (e.g., Antoniou & Kyriakides, 2011; Borko, 2004; Clewell et al., 2004; Kennedy, 1998; Killion, 1999; Loucks-Horsley & Matsumoto, 1999; Supovitz, 2001). At the same time, there is more literature on the effects of professional development on teacher learning and teaching practice; however, these fall short of demonstrating effects on student achievement (Garet et al., 2001). In this context, while those responsible for professional development have generally assumed a strong and direct relationship between professional development and improvements in student learning, few have been able to describe the precise nature of that relationship (Guskey & Sparks, 2002). Likewise, according to an extensive review by Van Veen et al. (2011), only a limited number of studies have focused on the relation between professional development interventions and student results (e.g., Antoniou & Kyriakides, 2011; Borko, 2004; Little, 2006; Loucks-Horsley & Matsumoto, 1999). Nevertheless, improvement programmes should be introduced only when they have been systematically evaluated using designs that demonstrate their impact on quality of education (Slavin, 2002). In this respect, in order to implement any professional

development programme at the regional or national level, there needs to be empirical evidence supporting the effectiveness of the programme in terms of student outcomes.

However, teacher professional development programmes are usually evaluated on the basis of summarising the activities undertaken as part of the professional development programme: what courses were attended, how many credits accrued etc. This clearly gives no indication of the effectiveness of the activities undertaken, making this form of data-collection inadequate as a means of looking at the effects of the programme (Nicolaidou & Petridou, 2011). Where some evaluation does exist, this usually takes the form of participant satisfaction questionnaires. Obviously, such questionnaires allow one to gauge whether participants considered the event to have been enjoyable and successful, but does not engage with issues such as gains in knowledge, or changes in teaching practice as a result of participating in the professional development programme, and certainly does not evaluate whether there have been changes in student outcomes. For example, in a study of teacher professional development activities in England, Edmonds and Lee (2002) found that in most cases evaluation took the form of a feedback questionnaire that was completed by teachers, including questions on delivery, content, and whether they felt the course had met its objectives. Follow-up was unusual, with actual effects on teaching and learning being very rarely studied.

Nevertheless and beyond the current limitations, Guskey (2000) distinguishes a hierarchy of five levels of impact. These levels are hierarchically arranged from simple to complex, that is, each successive level of evaluation is more complex than the previous one. The first three levels of this model relate to participants' reactions to, and satisfaction with, the programme, participants' knowledge and organisational support and change. The final two levels of this model are considered by Guskey to be the hardest to achieve and at the same time the most important. In particular, level 4 refers to the evaluation of the participants' use of new knowledge and skills. The extent to which such knowledge and skills have made a difference in participants' professional practice is the focus of evaluation at this level. This analysis should be based upon predetermined, clear indicators of both the degree and the quality of implementation. Finally, the fifth and top level in the evaluation of professional development programmes continuum is the evaluation of student learning outcomes. Therefore a range of evaluative approaches is needed that match Guskey's levels and have the potential to provide meaningful formative and summative feedback for teachers, school principals and policy-makers at the system level. Employing a more comprehensive approach to evaluating the outcomes and the impact of teacher professional development programmes, and aiming to identify changes in teacher perceptions, teaching skills and student outcomes might reveal important information related to the effectiveness of these programmes and assist policy-makers in taking informed decisions regarding improvement.

Summing up, it is proposed that an integrated approach, which merges key elements of the two dominant approaches to teacher training and professional development, is needed to overcome their main weaknesses. In this context, it has also been argued that research on teacher training and professional development should utilise the main findings of EER. By establishing links between these two fields, both of them could have mutual benefits. In particular, research on teacher professional development could expand its research agenda by taking into consideration the impact of effective programmes on student outcomes and at the same time EER could identify the extent to which its validated theoretical models could be used for improvement purposes. In this way, stronger links between research, policy and improvement of teaching practice could be established.

In summary, the first section of this handbook has provided a critical review of research on teacher training and professional development. It has been shown that this field of research has been dominated by two different and somewhat opposing approaches: the CBA and the HA. These two approaches have been described and their strengths and weaknesses discussed. In this section, it is argued that we may have to guard ourselves against confining the discussion to this classical dichotomy relating to content and develop an integrated approach to teacher professional development that will focus on the improvement of grouping of teacher factors. For this purpose, not should only reflection and understanding of practice be encouraged, but research on teacher effectiveness should also be taken into account.

### ***A Dynamic Approach To Teacher Professional Development***

In this section, we argue that teacher factors are interrelated and that stages of effective teaching can be defined by taking into account the eight factors of the dynamic model and their five dimensions. Thus specific strategies for improving effectiveness that are more comprehensive in nature may emerge by investigating at the grouping of teacher factors in the dynamic model.

This grouping of factors emphasises the need to establish a Dynamic Integrated Approach (DIA) to teacher professional development. This approach lies between the two dominant approaches (i.e., the CBA and the HA), which have been earlier presented and aims to overcome their main weaknesses. In particular, the dynamic dimension of this approach is attributed to the fact that its content derives from the grouping of teaching skills included in the dynamic model and it is differentiated to meet the needs and priorities of teachers at each developmental stage. The integrated dimension of this approach is also attributable to the fact that although the content of the DIA refers to teaching skills that were found to be positively related to student achievement, the participants were also engaged in systematic and guided critical reflection on their teaching practices. In this section, beyond presenting the main steps of the DIA, we also refer to the assumptions upon which each step is based. In the next

section, we refer to the main results of an experimental study which managed to compare the impact of the DIA and the HA upon teaching skills and student achievement through four teacher professional development programmes offered at the school (school-based) and externally. This study provides suggestions for readers about how to design a summative evaluation of teacher professional development programmes based on the proposed dynamic approach.

### **The Main Steps of the DIA**

This section demonstrates the basic steps which have been utilised to develop a DIA to teacher professional development. This approach takes into account research findings on the grouping of factors in the dynamic model and their relation to student outcomes. In addition, the DIA is based on the assumption that INSET courses are offered by an A&RTeam. Each teacher is expected to develop his/her own strategies and action plans for improvement, but it is acknowledged that support for teachers should also be offered by an A&RTeam, which is able to provide technical expertise and the available knowledge-base on improvement of teaching factors. Although a teacher is treated as being responsible for designing and implementing his/her own improvement strategies and action plans, he/she is not left alone to design and implement the strategies and actions, but is encouraged to make use not only of the A&RTeam, but also of other available resources within and outside the school. Therefore a systematic research-based approach to design, implementation and evaluation of teacher improvement programmes is promoted.

#### **1) Identify needs and priorities for improvement through empirical investigation.**

The first step of the proposed approach is based on the assumption that teacher improvement efforts should refer to the development of teaching skills found to be related to student outcomes. Research on teacher effectiveness refers to specific factors concerned with teacher behaviour in the classroom that are found to be associated with student outcomes and thus the DIA refers to the development of INSET courses addressing the teacher factors in the dynamic model. This implies that the DIA is based on the assumption that the ultimate aim of any improvement effort should be to promote student learning and its outcomes (see Creemers & Kyriakides, 2010). To achieve this, INSET courses are expected to help teachers improve their teaching skills and therefore become more effective. The DIA goes further in suggesting that evaluation data are needed in order to identify the needs of each teacher participating in the improvement project. In any effort to train teachers, an initial evaluation of their teaching skills should be conducted to investigate the extent to which they possess certain teaching skills, whilst identifying their needs and priorities for improvement. The results of the initial evaluation can provide suggestions for the content of training that is

offered to different groups of teachers. The teaching skills of the participants can be evaluated by the A&RTeam. For this reason, they can make use of the research instruments applied in studies testing the validity of the dynamic model at the teacher level (see Kyriakides & Creemers, 2008). The observation data of the initial evaluation are analysed in order to group teachers into corresponding developmental stages, according to their teaching skills. This is important, because the content and development of educational material for the training programmes should correspond to the professional needs and *proximal development* of each group of teachers, as denoted by the stage of teaching skills they have reached. According to Berliner (1988), it may not be possible to shorten the pathway because extensive experience is fundamental to development, but it would be beneficial to assist those willing to progress by providing training and feedback appropriate to their stage of development. For example, teachers must master simple but necessary routines such as teaching skills related to the 'direct teaching approach' in order to move to higher stages involving the use of 'new teaching approaches' and differentiation. As Combs et al. (1974, p.4) argue, 'In the first place, it is a fallacy to assume that the methods of the experts either can or should be taught directly to beginners'. Furthermore, the DIA supports the view that the effort to identify teachers' needs and priorities for improvement should be guided by the knowledge base of EER, as it is described in the dynamic model. This is an important issue that needs to be taken into account in conducting the initial evaluation, especially since the dynamic model refers to teaching skills found to be related to student achievement. On the other hand, the HA to teacher professional development supports the idea that teachers are able to identify a problem in relation to the improvement of student outcomes, which they consider important, without the need to justify their selection; this is irrespective of their initial competencies or developmental stage. However, in chapter 4, the major weaknesses of this approach are explained. Thus an initial evaluation of teaching skills by making use of the available knowledge base of EER is considered as the first step of the DIA, which is based on the assumption that an evidence-based and theory-driven approach to teacher professional development should be used in designing, implementing and evaluating teacher professional development programmes.

## **2) Provide guidelines for improvement: The role of the A&RTeam.**

Having identified teachers' needs and priorities for improvement, the second step of this approach relates to the provision of appropriate material and specific guidelines for designing their improvement action plans. The A&RTeam is expected to support teachers as they design and implement their improvement action plans. Specifically, the team is expected to provide the teachers of each group with supporting literature and research findings related to the teaching skills of their developmental stage, with clear instructions about the area on which

each group should concentrate for improvement. For example, the teachers in the first stage of teaching skills should receive guidance on the distribution of teaching time so that students can effectively construct and implement new knowledge. A case study could be administered to the teachers in this group, in order to encourage them to discuss the importance of the quantity of teaching time. In addition, material from the literature could be provided regarding the management of the classroom as an efficient learning environment, in order to maximise engagement rates (Creemers & Reezigt, 1996; Wilks, 1996). Through discussion, it is expected that teachers attending this course will realise that learning takes place within restricted time limits during which many important activities must be implemented. Extra-curricular administrative activities, such as making announcements, dealing with discipline problems and commenting on irrelevant issues could further reduce the time available for learning. Thus the teachers attending the course may understand that actions should be taken in order to improve their time-management skills and find out how to allocate sufficient time to each learning activity.

The A&RTeam is also expected to provide the teachers in this group with guidelines related to their improvement priorities, supplemented by research literature material. For instance, for the improvement area related to the '*provision of application activities*' the A&RTeam may recommend some general principles, such as: a) the teacher should provide the opportunity for students to practise the implementation of knowledge and skills involved in each lesson; b) feedback should be provided for students while they are working on application activities; and c) the teacher should raise questions with individual students in the course of their work on application activities to identify and deal with misunderstandings. Following this, examples of teaching specific material from the school curriculum may be provided for teachers. In this way, they are encouraged both to reflect on these aspects of their teaching practice and to provide their own examples of implementing the principles of the school curriculum.

Subsequently, under the guidance of the A&RTeam each teacher should develop his/her own action plan for improvement. This allows teachers to adopt and customise the provided guidelines in relation to the specific context of their classroom. The basic elements of a general plan of action should also be discussed. It should be agreed that action plans will include:

1. A revised statement of the general idea underpinning the purpose of improvement.
2. A statement of the factors and dimensions the teacher plans to improve.
3. Specific actions the teacher will undertake to achieve the improvement. For example, one teacher situated at Level 2 may decide to modify the way she retrieves and relates prior knowledge to new knowledge by asking questions, assigning a relevant problem

and asking students to interpret a map or tree-diagram which requires knowledge from previous lessons.

4. A statement of the resources required in order to undertake the proposed courses of action (e.g., materials, rooms, equipment).
5. Evaluation: Teachers should use various techniques and methods for gathering evidence on the effectiveness of their action plans. For this reason, teachers are encouraged to keep a reflective diary. This diary could contain personal accounts of observations, feelings, reactions, interpretations, reflections, hunches, hypotheses and explanations. Teachers could also ask their pupils to keep diaries. As Brophy and Good (1986) argue, this enables the teacher to compare their experiences of the situation with those of the pupils. Moreover, other teachers at the school could observe their teaching (e.g., acting as 'critical friends').

### **3) Establish formative evaluation mechanism.**

The next step of the teacher professional development programme, based on the grouping of the factors of the dynamic model, comprises the establishment of formative evaluation procedures. Formative evaluation is the method of ongoing and concurrent evaluation which aims to improve the programme. The formative evaluation procedures developed for the teacher professional development programme can be carried out on a regular basis (e.g., once a month) throughout the programme to provide information and feedback for improving: a) the quality of teachers' learning, b) the extent to which they implement the teaching skills in their classrooms and finally, c) the quality of the programme itself.

The formative evaluation procedures should involve: the identification of the learning goals, intentions or outcomes, and criteria for achieving them; the provision of effective, timely feedback to enable teachers to advance their learning; the active involvement of teachers in their own learning, and lastly, improvement in teaching skills as a result of teachers responding to identified learning needs and priorities. These procedures could be accomplished by the A&RTeam and participating teachers.

### **4) Establish summative evaluation mechanism.**

The final step of the proposed approach to the teacher professional development programme is concerned with the summative evaluation of the project. The emphasis of the summative evaluation should not be on comparing teachers with each other, but on identifying the overall impact of the programme on the development of teachers' skills and its indirect effect on student learning. The results of summative evaluation assist in measuring the effectiveness of



the DIA and allow subsequent decisions to be made regarding the continuity of the programme.

This implies that at the end of the school year teaching skills and student outcomes should be measured. Specifically, the teaching skills of the participating teachers should again be evaluated by focusing on the eight factors of the dynamic model concerning teacher behaviour in the classroom. In this way, we will be able to identify the impact of the DIA on improving the skills of teachers who have made use of the DIA. Data on student achievement should also be collected, in order to measure the effectiveness of the DIA in terms of student achievement gains.

## **AN EXPERIMENTAL STUDY ON USING THE DYNAMIC MODEL FOR DESIGNING TEACHER PROFESSIONAL DEVELOPMENT PROGRAMMES**

---

The experimental study presented in this section investigated how teachers can develop their skills and especially if the use of the dynamic model to develop in-service training programmes is more effective than the use of the holistic approach (HA) which is also advocated widely for teacher professional development. Moreover, the extent to which the impact of these two approaches depends on whether they are offered externally or on a school-basis was examined. This is also due to the fact that the dynamic model emphasises the relation among school level factors (i.e., policy on teaching and policy on the school learning environment) and teacher professional development. The latter implies that the results of this experimental study will help us investigate not only the impact of using the dynamic model for teacher improvement purposes but also the functioning of school factors and their impact on quality of teaching. Finally, the extent to which a change in the functioning of the school factor concerned with the learning environment of the school influences other school factors and/or the quality of teaching and/or student outcomes is identified and thereby the dynamic perspective of educational effectiveness is illustrated.

In order to provide answers to these questions a sample of 60 primary schools was selected. At the beginning of the school year 2010-2011, data on student background variables and achievement in mathematics and science were collected. The schools were then randomly assigned to four programs of professional development and a group randomization study was conducted. Two of the programs were in line with the dynamic model in terms of grouping teacher skills into simpler or more complex types of teacher behavior. Therefore, these two programs were concerned with addressing the specific needs of teachers to help them progress from one level to the next. The difference between these first two programs is that one was carried out externally, with teachers asked to attend courses provided by the research team at the University of Cyprus. On the other hand, the second was provided internally; the research team helped each school to develop its own strategies for teacher professional development. The other two programs followed the HA to teacher professional development. The research team encouraged reflection and understanding of experiences and beliefs, without taking into account the different developmental levels of teachers' behavior. Once again, one of them was provided externally and the other internally.

In order to compare the impact of these programs on teacher behavior, changes in the behavior of all grade 4-6 teachers (n=334) in the school sample were measured. For this purpose, data regarding teacher behavior, both at the beginning and end of the programs (i.e. the school years 2010-2011 and 2011-2012), were collected through external observations. Data were also collected on students' achievement in mathematics at the beginning and end of

the school years. Information was also collected on two student background factors: sex (0=boys, 1=girls), and socioeconomic status. The observational data of each time period were analyzed separately following the procedure described by Kyriakides et al. (2009). The Rasch model was applied to the data of the baseline measure and it was found that all of the teaching skills included in the dynamic model can be grouped into the same five stages proposed by previous research findings (see Kyriakides et al., 2009). This approach was also applied to data which emerged from the final measurement of teaching skills.

Teaching skills could once again be optimally clustered into the five stages described above (see Kyriakides, Creemers, & Panayiotou, 2012). Considering the results of the analyses of initial and final data related to teaching skills, we can conclude that on both occasions the results validated the five developmental stages of teaching skills proposed by previous research findings (Antoniou, 2009; Antoniou, Creemers, & Kyriakides, 2009; Kyriakides et al., 2009). In order to measure the impact of the four professional development programs upon teaching skills, the Rasch person estimates of each group were compared. Table 1 presents the means and standard deviations of teacher scores for each experimental group, which emerged from measuring their teaching skills at the beginning and at the end of the intervention. We can observe that the initial mean scores of the four groups were almost the same.

*Table 1* Means and standard deviations of teacher scores measuring quality of teaching of each of the experimental groups at the beginning and at the end of the intervention

Group	Beginning of the intervention		End of the intervention	
	Mean	S.D.	Mean	S.D.
Employing DIA externally (n=84)	-0,74*	1,43	-0,32	1,56
Employing DIA internally (n=85)	-0,74	1,47	-0,33	1,63
Employing HA externally (n=82)	-0,76	1,45	-0,76	1,44
Employing HA internally (n=83)	-0,75	1,46	-0,74	1,46

One-way analysis of variance revealed that there was no statistically significant difference among the four groups with regard to the initial Rasch person estimates ( $F=0.006$ ,  $p=.999$ ). The final score of teachers employing the DIA, either externally or internally, was bigger than their initial score, and the t-test paired sample revealed that the difference observed in each group was statistically significant (i.e., DIA provided internally:  $t=10.03$ ,

df=84, p=.001 and DIA provided externally: t=11.07, df=83, p=.001). This finding reveals that both groups of teachers employing the DIA managed to improve their teaching skills. On the other hand, the mean final and initial scores of the two groups employing the HA were almost the same and the t-test paired test revealed that teachers in the two HA groups did not manage to improve their teaching skills (i.e., HA provided externally: t=0.32, df=81, p=.75 and HA provided internally: t=1.09, df=82, p=.28).

In order to identify whether each intervention had an impact on the teaching skills of teachers, a regression analysis was also employed. The final score of teachers was treated as a dependent variable, whereas the initial score, as well as three dummy variables measuring the impact of each intervention, were treated as independent variables. The group of teachers who employed the HA externally was treated as the reference group. The model that was found to fit better with the data was able to explain a very large percentage of the variance in the final score for teaching skills (87%) and the equation that emerged is given below:

$$\text{Post score} = .031 + 0.932 * \text{pre score} + 0.416 * \text{DIA External} + 0.411 * \text{DIA Internal} + r$$

This implies that there was no statistically significant difference between the post-score of the group which employed the HA internally and that of the group using the same approach externally. On the other hand those teachers who employed the DIA (either internally or externally) obtained a better score than those using the HA. It is finally important to note that by comparing the standardized beta coefficients we can see that the impact of the DIA, either internally or externally, was as great as the impact of each of the two groups employing the HA (DIA externally: 0.116 and DIA internally: 0.116). Although the effect size of the DIA was relatively small, the results reveal that providing the DIA either internally or externally helped teachers improve their skills, whereas those employing the HA did not manage to improve their skills. It can also be claimed that no added value was identified in terms of providing the DIA internally rather than externally since both approaches had the same impact on the teachers' final score. Similarly, there was no difference in the impact of the HA when it was provided internally rather than externally.

Multilevel analysis was conducted in order to measure the impact of each of the four approaches to teacher professional development on student achievement (see Table 2). In model 1 the context variables at each level and the teacher background information were added to the empty model. All student background variables had statistically significant effects on student achievement. With regard to the effect of the teacher background variables, only length of teaching experience was found to be associated with student achievement.

In model 2, the impact of quality of teaching upon student achievement was investigated. It is shown that the developmental stage at which a teacher was situated had a statistically significant effect on student achievement. In model 3 the effect of each approach employed with regard to teacher professional development was investigated. Teachers in the

group employing the HA externally were treated as a reference (or baseline) group and three dummy variables indicating the teacher professional approach employed (i.e., HA provided internally, DIA provided externally, and DIA provided internally) were entered into model 2. Only the effect of the two dummy variables measuring the impact of providing a DIA was found to be statistically significant at .05 level. This implies that students of teachers employing the HA internally had no better results than those using the HA externally. On the other hand, students of teachers employing the DIA either internally or externally managed to obtain better results than those of teachers employing the HA. It is finally important to note that the effect size of employing the DIA internally was no bigger than the effect size of employing the same approach externally. Thus the results of the multilevel analysis provide evidence that only the DIA yielded better results in student achievement than those produced by the HA but did not provide support for the assumption that offering the DIA internally generated better results.

Table 2 Parameter Estimates and (Standard Errors) for the analysis of student achievement in mathematics (Students within classes, within schools)

Factors	Model 0	Model 1	Model 2	Model 3
<b>Fixed part (Intercept)</b>	-0.59 (0.10)	-0.39 (0.07)	-0.32 (0.07)	-0.25 (0.07)
<b>Student Level</b>				
<u>Context</u>				
Prior achievement in mathematics		0.59 (.12)	0.60 (.11)	0.59 (.12)
SES		0.31 (.11)	0.31 (.11)	0.30 (.10)
Gender (0=boy, 1=girl)		0.09 (.04)	0.09 (.03)	0.09 (.03)
<b>Classroom Level</b>				
<u>Context</u>				
Average achievement		0.34 (.10)	0.34 (.09)	0.34 (.09)
Average SES		0.21 (.08)	0.20 (.08)	0.20 (.08)
Percentage of girls		N.S.S.	N.S.S.	N.S.S.
<u>Teacher background</u>				
Gender (0=male, 1=female)		N.S.S.	N.S.S.	N.S.S.
Years of experience		0.12 (.03)	0.12 (.03)	0.13 (.03)
Position (0=teacher, 1=deputy head)		N.S.S.	N.S.S.	N.S.S.
<u>Quality of Teaching</u>				
Stage 1			-0.31 (.05)	-0.30 (.05)
Stage 2			-0.20 (.05)	-0.20 (.05)
Stage 4			0.16 (.05)	0.16 (.05)
<u>Intervention</u>				
HA Internally				N.S.S.
DIA Externally				0.14 (.06)
DIA Internally				0.15 (.06)
<b>School Level</b>				
<u>Context</u>				
Average achievement		0.12 (.04)	0.11 (.04)	0.11 (.04)
Average SES		0.09 (.03)	0.09 (.03)	0.09 (.03)
Percentage of girls		N.S.S.	N.S.S.	N.S.S.
<b>Variance components</b>				
School	9.0%	7.2%	7.0%	5.8%
Class	15.7%	14.3%	9.5%	8.2%
Student	75.3%	45.0%	44.5%	44.0%
Explained		33.5%	39.0%	42.0%
<b>Significance test</b>				
$X^2$	983.8	743.5	631.4	550.1
Reduction		240.3	112.1	81.3
Degrees of freedom		8	3	2
p-value		.001	.001	.001

N.S.S. = No statistically significant effect at level .05

Implications of this study for research and policy on teacher professional development can be drawn. This study reveals the added value of using the DIA rather than the HA, both internally and externally. Teachers participating in professional development programs based on the DIA managed to make statistically significant progress in terms of their teaching skills. In addition, the project shows that when the DIA is provided externally is no less effective than when it is provided internally. This seems to indicate that there is a need for further research to identify how and under which circumstances the DIA offered at school level can maximize its effects. In this respect, a systematic review of the literature on school-based INSET is needed to identify its additional value in relation to improving not only the quality of teaching, but also that of the school learning environment and the school policy on teaching.

## **CONCLUSIONS - IMPLICATIONS FOR RESEARCH, POLICY AND PRACTICE**

The principal objective of this handbook is to make a major contribution to knowledge and theory by drawing the implications of TER for the field of teacher training and professional development. For this purpose, research on teacher training and professional development was presented. More specifically, a critical review of research on teacher training and professional development was presented and the limitations of the main approaches to teacher development, for example the CBA and the HA were illustrated. Then, a dynamic perspective on policy and practice in teacher training and professional development was supported. This perspective is characterised by making use of validated theoretical models of teacher effectiveness and helping teachers move gradually from simple to more complex types of teacher behaviour, encompassing specific teaching competences. Another important feature of the DIA has to do with its attempt not only to take into account the stage to which each teacher belongs, but also to offer training to each teacher in order to help him/her move on to the next, more demanding stage.

However, the experimental study presented in this handbook was concerned with the short-term effect of the DIA upon the improvement of teaching skills and upon the student learning outcomes. This implies that there is a need for research investigating the long-term effects of the DIA and its added value, comparing it with more traditional approaches, such as the CBA or the HA. The sustainability over time of the effects of teacher professional development programmes based on the DIA could also be investigated by conducting experimental studies lasting for many school years. It is important to note here that sustainability of teacher professional development programmes has not been investigated to any great extent (Avalos, 2011). Some research findings indicate that teachers commonly do not apply either the problem-solving processes or teaching skills learned in professional development courses in their classrooms once the interventions or training courses have ended (e.g., Riley- Tillman & Eckert, 2001). In general, follow-up data do not indicate sustainability of skills. In a meta-analysis conducted by Rose and Church (1998), only 20 studies measuring the sustainability of the results of teacher professional development programmes have been found. In the majority of those studies, the period from post-test to follow-up tended to be short (i.e., 9 of the 20 studies collected follow-up data only four weeks after the post-test) and their results indicate that only eight studies were categorised as “complete maintenance” indicating that performance of the target skills was sustained at or above levels attained during training. The studies which met this criterion had several things in common, including training of teachers in their own classroom with a practice and feedback component and a behavioural analysis approach to training. Nevertheless, as Roland



(2011, p. 385) argues 'In addition to initial implementation, sustainability of the intervention is important to the student's continued success'. In this sense it is critical to investigate further the sustainability of the effects of the interventions in terms of teacher professional development as changes due to interventions may revert to baseline after the intervention stimulus ends.

Another issue that needs to be examined is whether and how the DIA can be expanded in order to bring teachers to a stage at which they can further improve their skills without having external DIA support. In order to achieve this aim, we need to design experimental studies that last longer and which can test whether teachers can improve their skills themselves without external and systematic support, especially since research findings seem to indicate that improvement is more apparent in those teachers who participate systematically in effective professional development programmes (e.g., King & Kitchener, 1994). Such studies can also show whether stage growth does not unfold unilaterally but requires a stimulating and supportive environment that can be provided by the research team involved in a DIA teacher professional development programme.

Also, another special characteristic of the DIA is that teachers who are at a certain stage are expected to develop action plans designing to help them achieve skills that are in line with the next, more demanding stage of effective teaching. In this context, the teachers employing the DIA were not given the opportunity to decide whether their action plans should be concerned with stages other than the one at which they were found to be situated. One could claim that the DIA does not give teachers the chance to identify by themselves areas which require improvement and thus they may not feel that they own the improvement project in which are involved. However, teachers are expected to develop their own action plans and decide which activities they can use in order to develop teaching skills. In addition, the monthly sessions give them the opportunity to examine critically whether their action plans need to be modified. Nevertheless, multi-treatment experimental studies could be conducted in order to find out whether teachers should be encouraged to develop action plans that are in line with their stage but nevertheless allowing them to focus their attention on any other stage that they choose or whether the DIA should remain more focused and expect each teacher to develop action plans in line with his/her own stage. Such studies could help us develop further the DIA and understand better the essential differences between the DIA and both the HA and the CBA.

In the previous section of the handbook we draw research implications of the findings of the project investigating the added value of offering the DIA internally rather than externally. The fact that there was no bigger impact when the DIA was offered internally as opposed to externally could be interpreted in two ways. One could simply argue that the DIA should be offered externally since this approach is more cost effective. On the other hand, one

could attribute this finding to the fact that when the DIA is offered internally it should not only be concerned with how to improve the teaching skills. Unless the special characteristics of internal professional development programmes are taken into account, their usage will have no extra beneficial effect. This implies that we need a better theoretical framework describing the special features of school-based INSET and how these contribute to the improvement of teacher effectiveness as measured through student achievement gains. A meta-analysis of studies investigating the impact of school-based INSET upon student achievement can help us find out in which conditions the school-based INSET can have a stronger impact on student achievement. Syntheses of studies investigating the impact of school-based INSET can be used to develop the DIA further and identify how their respective basic elements and special features can be combined. At this stage, we will also need multi-treatment experimental studies to find out how to offer the DIA internally and achieve better results rather than when it is offered externally. For example, we may find out that by involving headteachers or other school stakeholders, we may be able to improve not only teaching practice but also school factors that are associated with student achievement, such as the school policy on teaching and the SLE.

Additionally, the DIA is concerned with the development of teaching skills that refer to generic teacher factors. Given that a recent meta-analysis (Seidel & Shavelson, 2007) shows that domain-specific teaching factors are associated with student achievement, further research is also needed to identify the extent to which the DIA can be expanded to cover not only generic, but also domain-specific teaching skills, such as the provision of explanations in teaching mathematics (see Charalambous, Hill, & Ball, 2011). We can see two different types of research that are needed in order to discover ways to expand the scope of the DIA. Longitudinal studies can be conducted in order to identify the relationship between domain-specific and generic teaching skills. Such studies may also reveal possibilities for establishing stages of effective teaching that refer to combinations of generic and domain-specific skills. Experimental studies could also be conducted in order to find out whether incorporating domain-specific skills when offering teacher professional development programmes based on the DIA may have a stronger impact on student achievement than DIA programmes concerned only with generic skills.

Finally, case studies can be conducted to identify the difficulties that teachers experience in moving up to the next level and to clarify the barriers associated with the amount of gaps between levels, as well as the difficulty of promoting teacher professional development programmes based on the DIA, especially since the great majority of courses cover the same topics for all participating teachers. Introducing an approach to teacher professional development that expects participating teachers to be evaluated formatively may not always be welcomed by some teachers, especially those who may not like to be

confronted with an evaluation process that reveals their weaknesses. Case studies of teachers who drop to a lower level for a variety of reasons (including burnout) could also be employed, especially since these studies may help us find out how to identify this group of teachers at an early stage. The findings of these studies may also help us expand the DIA and cover issues associated not only with the improvement of their teaching skills, but also with other aspects that affect their professional careers. Such findings may also reveal that in helping teachers to improve their skills, other factors, such as their efficacy beliefs and attitudes towards the teaching profession, should be considered, particularly to encourage teachers to be involved in a teacher professional development programme based on the DIA. Teachers participating in the experimental study presented in this handbook were all volunteers and this not only caused some problems in relation to the external validity of the study but also revealed the importance of finding ways to encourage them to participate in the DIA programmes.

In this handbook we provide the readers with a critical review of research on teacher training and professional development and demonstrate the limitations of the main approaches to teacher development, explaining how a dynamic approach to teacher professional development can be used for improving teaching skills. Then we provide suggestions for further research which can be conducted in order to expand this approach and the knowledge base concerning teacher training and teacher professional development. Therefore we hope that readers with research interests will find the handbook useful when designing their own studies and a helpful contribution to this line of research on teacher training and professional development, which aims to improve teaching practice and, through that, student learning outcomes.

## REFERENCES

---

- Adler, S. (1990). The Reflective Practitioner and the Curriculum of Teacher Education. *Paper presented at the Annual Meeting of the Association of Teacher Educators*. Las Vegas, USA, February 1990.
- Adler, S. (1991). The Reflective Practitioner and the Curriculum of Teacher Education. *Journal of Education for Teaching*, 17(2), 139-150.
- Admiraal, W., & Wubbels, T. (2005). Multiple voices, multiple realities, what truth? Student teachers' learning to reflect in different paradigms. *Teachers and Teaching: theory and practice*, 11(3), 315–329.
- Antoniou, P. (2009). *Using the Dynamic Model of Educational Effectiveness to Improve Teaching Practice: Building an Evaluation Model to Test the Impact of Teacher Professional Development Programs*. Unpublished Doctoral Dissertation, University of Cyprus, Cyprus.
- Antoniou, P., & Kyriakides, L. (2011). The impact of a dynamic approach to professional development on teacher instruction and student learning: results from an experimental study. *School Effectiveness and School Improvement*, 22(3), 291-311.
- Argyris, C., & Schon, D. (1978). *Organizational Learning. A theory of action perspective*, Reading, Massachusetts: Addison-Wesley Publishing Company.
- Ashworth, P. (1992). Being competent and having “competencies”. *Journal of Further and Higher Education*, 16(3), 30–38.
- Ayres, P., Dinham, S., & Sawyer, W. (2000). Successful Senior Secondary Teaching. *Quality Teaching Series*, No. 1, Australian College of Education, Deakin.
- Baines, L.A., & Stanley, G.K. (2006). The Iatrogenic Consequences of Standards-Based Education. *Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 79(3), 119-123.
- Ball, D.L., & Cohen, D.K. (1999). Developing practice, developing practitioners: Toward a practice-based theory of professional education. In G. Sykes & L. Darling-Hammond (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 3-32). San Francisco: Jossey Bass.
- Ball, D.L., & Forzani, F. M. (2011). Building a common core for learning to teach, and connecting professional learning to practice. *American Educator*, 35(2), 17-21, 38-39.
- Ball, S. (1994). *Education reform: A critical and post-structural approach*. Buckingham, England and Philadelphia: Open University Press.
- Bathmaker, A. (2000). Standardising Teaching: the introduction of the National standards for teaching and supporting learning in further education in England and Wales. *Journal of In-Service Education*, 26(1), 9–23.
- Ben-Peretz, M. (1984). Curriculum theory and practice in teacher education programs. In L.G. Katz & J.D. Raths (Eds), *Advances in Teacher Education, Vol. 1* (pp. 9-27). Norwood, NJ: ABLEX Publishing.
- Berliner, D. (1988). *The Development of Expertise in Pedagogy*. Charles W. Hunt Memorial Lecture for the American Association of Colleges in Teacher Education, New Orleans, LA.
- Berliner, D. (1994). Expertise: The wonder of exemplary performances. In J. Mangieri & C. Block (Eds.), *Creating powerful thinking in teachers and students: Diverse perspectives*, (pp. 161–186). Fort Worth, TX: Harcourt Brace College.

- Beyer, L. (1984). Field experience, ideology, and the development of critical reflectivity. *Journal of Teacher Education*, 35(3), 36-41.
- Biemans, H., Nieuwenhuis, L., Poell, R., Mulder, M., & Wesselink, R. (2005). Competence-Based VET in the Netherlands: Background and Pitfalls. *Journal of Vocational Education and Training*, 56(4), 523-538.
- Bierman, K., Nix, R.L., Greenberg, M.T., Blair, C., & Domitrovich, C. (2008). Executive functions and school readiness intervention: Impact, moderation, and mediation in Head Start REDI program. *Development and Psychopathology*, 20, 821-843.
- Billett, S. (2001). Knowing in practice: Reconceptualising vocational expertise. *Learning and Instruction*, 11, 431-452.
- Birmingham, C. (2004) Phronesis. A model for pedagogical reflection. *Journal of Teacher Education*, 55(4), 313-324.
- Blank, R. K. & de las Alas, N. (2009). *Analysis of the quality of professional development programs for mathematics and science teachers: Findings from a cross-state study*. Washington, DC: Council of Chief State School Officers.
- Borko, H. (1988). Student teachers' planning and post lesson reflections: patterns and implications for teacher preparation. In J. Calderhead (Ed.), *Teachers' Professional Learning*. Lewes: Falmer Press.
- Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational Researcher*, 33(8), 3-15.
- Borko, H., Jacobs, J., & Koellner, K. (2010). Contemporary approaches to teacher professional development: Processes and content. In P. Peterson, E. Baker, & B. McGaw (Eds.), *International encyclopedia of education*, Vol. 7 (pp. 548-556). Oxford: Elsevier.
- Boud, D., Cohen, R., & Walker, D. (1993). *Using Experience for Learning*. Buckingham: SRHE/Open University Press.
- Bransford, J.D., Brown, A.L., & Cocking, R.R. (Eds.). (1999). *How people learn: Brain, mind, experience, and school*. Washington, DC: National Academy Press.
- Britzman, D.P. (1986). Cultural myths in the making of a teacher: Biography and social structure in teacher education. *Harvard Educational Review*, 56(4), 442-56.
- Britzman, D.P. (1991). *Practice Makes Practice: A Critical Study of Learning to Teach*. Albany: State University Press.
- Brooks, R. (2002). The individual and the institutional: Balancing professional development needs within further education. In G. Trorey & C. Cullingford (Eds), *Professional Development and Institutional needs* (pp. 35-50). Hampshire, England: Ashgate Publishing.
- Brophy, J., & Good, T.L. (1986). Teacher behavior and student achievement. In M.C. Wittrock (Ed.), *Handbook of research on teaching* (3rd ed, pp. 328-375). New York: MacMillan.
- Buczynski, S., & Hansen, C.B. (2010). Impact of professional development on teacher practice: uncovering connections. *Teaching and Teacher Education*, 26(3), 599-607.
- Bunda, M.A., & Sanders, J.R. (eds.) (1979). *Practices and Problems in Competency-Based Education*. UMI: A Bell and Howell Company.
- Burke, J.W. (Ed.) (1989) *Competency-based Education and Training* (Lewes, Falmer Press).
- Calderhead, J. (1989). Reflective teaching and teacher education. *Teaching and Teacher Education*, 5(1), 43-51.
- Campbell, R.J., Kyriakides, L., Muijs, R.D., & Robinson, W. (2004). *Assessing Teacher Effectiveness: A Differentiated Model*. London: Routledge/Falmer.

- Caniels, M.C.J. (2004). Teaching Competencies Efficiently through the Internet—A Practical Example. *European Journal: Vocational Training*, 34, 40-48.
- Carey, N., & Fretchling, J. (1997). *Best practice in action: Follow-up survey on teacher enhancement programs*. Arlington, VA: National Science Foundation.
- Carr, D. (1993). Guidelines for Teacher Training: the competency model. *Scottish Educational Review*, 25(1), 17- 25.
- Carter, K., Cushing, K., Sabers, D., Stein, P., & Berliner, D. (1988). Expert–novice differences in perceiving and processing visual classroom information. *Journal of Teacher Education*, 39, 25–31.
- Chandler, P., Robinson, W.P., & Noyes, P. (1991). Is a Proactive Student Teacher a Better Student Teacher? *Research in Education*, 45, 41-52.
- Chang, C. (2006). Development of Competency-Based Web Learning Material and Effect Evaluation of Self-Directed Learning Aptitudes on Learning Achievements. *Interactive Learning Environments*, 14(3), 265-286.
- Chang, C. (2007). Evaluating the Effects of Competency-Based Web Learning on Self-Directed Learning Aptitudes. *Journal of Computers in Mathematics and Science Teaching*, 26(3), 197-216.
- Charalambous, C.Y., Hill, H.C., & Ball, D.L. (2011). Prospective teachers’ learning to provide instructional explanations: How does it look and what might it take? *Journal of Mathematics Teacher Education*, 14, 441-463.
- Chater, M. (2007). Behaviour Management. In Johnston, J., Halocha, J., & Chater, M. (Eds), *Developing Teaching Skills* (pp.61-78). England: Berkshire, Open University Press.
- Chi, M., Feltovich, P., & Glaser, R. (1981). Categorization and representation of physics problems by experts and novices. *Cognitive Science*, 5, 121–152.
- Chown, A. (1996). Post-16 Teacher Education, National Standards and Staff Development Forum: time for openness and voice? *British Journal of In-Service Education*, 22(2), 133 – 150.
- Christie, F., & O’ Brien, J. (2005). A Continuing Professional Development Framework for Scottish Teachers: steps, stages, continuity or connections? In A. Alexandrou, K. Field & H. Mitchell (Eds), *The Continuing Professional Development of Educators* (pp. 93-110). Oxford, UK: Symposium books.
- Chyung, S.Y., Stepich, D., & Cox, D. (2006). Building a Competency-Based Curriculum Architecture to Educate 21st-Century Business Practitioner. *Journal of Education for Business*, 81(6), 307-314.
- Clewell BC, Campbell PB, & Perlman L, (2004) *Review of evaluation studies of mathematics and science curricula and professional development models* (Urban Institute, Washington, DC).
- Clift, R., Houston, R., & Pugach, M. (Eds.) (1990). *Encouraging reflective practice in education. An analysis of issues and programs*. New York: Teachers College Press.
- Cochran-Smith, M., & Zeichner, M.K. (2005). *Studying Teacher Education: The Report of the AERA Panel on Research and Teacher Education*. AERA Panel on Research and Teacher Education. Routledge.
- Cohen, D.K. (1990). A revolution in one classroom: The case of Mrs. Oublier. *Educational Evaluation and Policy Analysis*, 12(3), 311-329.
- Cohen, D.K., & Hill, H.C. (2001). *Learning policy*. New Haven, CT: Yale University Press.
- Cole, A.L., & Knowles, J.G. (1993). Shattered Images: understanding expectations and realities of field experience, *Teaching and Teacher Education*, 9(5-6), 457-471.

- Combs, A.W., Blume, R.A., Newman, A.J., & Wass, H.L. (1974). *The professional education of teachers: A humanistic approach to teacher preparation*. Boston: Allyn & Bacon.
- Conway, P.F. (2001). Anticipatory reflection while learning to teach: From a temporally truncated to a temporally distributed model of reflection in teacher education. *Teaching and Teacher Education*, 17, 89–106.
- Copeland, W. D., Birmingham, C., De La Cruz, E., & Lewin, B. (1993). The Reflective Practitioner in Teaching: towards a research agenda. *Teaching and Teacher Education*, 9(4), 347-359.
- Copeland, W.D. (1991). The reflective practitioner in teaching. *Paper presented at the American Educational Research Association annual meeting*. Chicago, April 1991.
- Corcoran, T. B., & McDiarmid, W. (2000). Promoting the professional development of teachers. In R. Pankratz & J. Petrosko (Eds.), *All children can learn: Lessons from the Kentucky reform experience* (pp. 141-158). San Francisco: Jossey-Bass.
- Corkindale, J., & Trorey, G. (2002). Career Dynamics in Further and Higher Education. In G. Trorey, & C. Cullingford (Eds), *Professional Development and Institutional needs* (pp.79-101). Hampshire, England: Ashgate Publishing.
- Cornford, I.R. (1996). Experienced teachers' views of competency-based training in NSW TAFE. In *Learning & work: The challenges: Con, fence papers*, Vol. 4 (pp. 105-115). Brisbane: Griffith University, Centre for Learning and Work Research.
- Cornford, I.R. (2002). Reflective teaching: Empirical research findings and some implications for teacher education. *Journal of Vocational Education & Training*, 54, 219–236.
- Cowen, R. (2002). Socrates was right? Teacher education systems and the state. In T. Elwyn (Ed.), *Teacher education: Dilemmas and prospects* (pp. 3-12). London, UK: Kogan.
- Craft, A. (2000). *Continuing Professional Development: a practical guide for teachers and schools*. London: Routledge Falmer.
- Creemers, B.P.M., & Kyriakides, L. (2006). Critical analysis of the current approaches to modelling educational effectiveness: The importance of establishing a dynamic model. *School Effectiveness and School Improvement*, 17(3), 347–366.
- Creemers, B.P.M., & Kyriakides, L. (2008). *The dynamics of educational effectiveness: A contribution to policy, practice and theory in contemporary schools*. London: Routledge.
- Creemers, B.P.M., & Kyriakides, L. (2010). Using the dynamic model to develop an evidence-based and theory-driven approach to school improvement. *Irish Educational Studies*, 29, 5–23.
- Creemers, B.P.M., Kyriakides, L., & Antoniou, P. (2013). *Teacher professional development for improving quality in teaching*. Dordrecht, the Netherlands: Springer.
- Creemers, B.P.M., & Reezigt, G.J. (1996). School level conditions affecting the effectiveness of instruction. *School Effectiveness and School Improvement*, 7(3), 197–228.
- Cruickshank, D. (1985). Uses and Benefits of Reflective Teaching. *Phi Delta Kappan*, 66(10), 704-706.
- Cruickshank, D., & Metcalf, K. (1990). Training within Teacher Preparation. In W. Houston (Ed.), *Handbook of Research on Teacher Education* (pp.469-497). New York: Macmillan.
- Dadds, M. (1991) Passionate enquiry: the role of self in teacher action research, paper presented at the *CARN Conference*, Nottingham.
- Darling-Hammond, L. (1997). *The right to learn*. San Francisco: Jossey-Bass.
- Darling-Hammond, L., & McLaughlin, M. W. (1995). Policies that support professional development in an era of reform. *Phi Delta Kappan*, 76(8), 597 - 604.
- Day, C. (1999). *Developing Teachers: the challenges of lifelong learning*. London: Falmer Press.

- Day, C. (2002). Revisiting the Purposes of Continuing Professional Development. In G. Trorey & C. Cullingford (Eds), *Professional Development and Institutional needs* (pp. 51-77). Hampshire, England: Ashgate Publishing.
- De Landsheere, V. (1988). *Faire reussir, faire echoue: La competence minimale et son evaluation: Pedagogie aujourd'hui*. Paris: Presses universitaires de France.
- Delandshere, G., & Arens, S.A. (2001). Representations of teaching and standards-based reform: are we closing the debate about teacher education. *Teaching and Teacher Education*, 17(5), 547-566.
- Delker, P.V. (1990). *Basic Skills Education in Business and Industry: Factors for Success or Failure*. Contractor Report, Office of Technology Assessment, United States Congress.
- Desimone, L. M. (2009). Improving impact studies of teacher's professional development: Toward better conceptualizations and measures. *Educational Researcher*, 38(3), 181-199.
- Desimone, L., Porter, A., Garet, M., Yoon, K. S., & Birman, B. (2002). Effects of professional development on teachers' instruction: Results from a three-year longitudinal study. *Educational Evaluation and Policy Analysis*, 24(81), 81-112.
- Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. Chicago: Henry Regnery.
- DfEE (2000). *Professional development (consultation paper)*. London: DfEE.
- Dinham, S., Brennan, K., Collier, J., Dece, A., & Mulford, D. (2000). The Secondary Head of Department: Key Link in the Quality Teaching and Learning Chain. *Quality Teaching Series*, 2, 1-35.
- Dinkelman, T. (2000). An inquiry into the development of critical reflection in secondary student teachers. *Teaching and Teacher Education*, 16, 195-222.
- Docking, R. (1994). Competency-based curricula-the big picture. *Prospect* 9(2), 8-17.
- Domitrovich, C.E., Gest, S.D., Gill, S., Bierman, K.L., Welsh, J. A., & Jones, D. J. (2009). Fostering high quality teaching with an enriched curriculum and professional development: Head Start REDI. *American Educational Research Journal*, 46, 567-597.
- Donmoyer, R. (1996). Educational research in an era of paradigm proliferation: What's a journal editor to do? *Educational Researcher*, 25(2), 19-25.
- Duckworth, E. (1987). *The Having of Wonderful Ideas and Other Essays on Teaching and Learning*. New York: Teachers' College Press.
- Duncan, B. (1998). *On Teacher Knowledge: a return to Schulman*. In *Philosophy of Education Yearbook 1998, electronic source 1- 3*. University of Illinois, Philosophy of Education Society: Urbana- Champaign.
- Edmonds, S. and Lee, B. (2002) Teacher feelings about continuing professional development. *Education Journal*, 61, 28-29.
- Edwards, R., & Usher, R. (1994). Disciplining the Subject: the power of competence. *Studies in the Education of Adults*, 26, 1-14.
- Elbaz, F. (1988). Critical Reflection on Teaching: insights from Freire. *Journal of Education for Teaching*, 14(2), 171-181.
- Elliot, B., & Calderhead, J. (1995). Mentoring for teacher development: possibilities and caveats. In T. Kerry & A. Shelton-Mayes (Eds), *Issues in Mentoring* (pp.35-55). London: Routledge in association with the Open University.
- Elliot, G. (1996). The Assessment and Accreditation of Lectures in Post-Compulsory Education: a critique of the use of the competence-based approaches. *British Journal of In-Service Education*, 22(1), 19-29.
- Elliot, J. (1987). Educational theory, practical philosophy and action research. *British Journal of Educational Studies*, 25, 149-170.



- Elmore, R. F., Peterson, P. L., & McCarthy, S. J. (1996). *Restructuring in the classroom: Teaching, learning, & school organization*. San Francisco: Jossey-Bass.
- Elmore, R.F. & Burney, D. (1996). *Staff development and instructional improvement: Community District 2, New York City*. Philadelphia: Consortium for Policy Research in Education.
- Ericsson, K.A., & Smith, J. (1991). *Toward a general theory of expertise: Prospects and limits*. New York: Cambridge University Press.
- Farrah, H. (1988). The Reflective Thought Process: John Dewey Re-Visited. *Journal of Creative Behaviour*, 22(1), 1-8.
- Faulkner, D., Freedland, M., & Fisher, E. (1999). *Public services: Developing approaches to governance and professionalism. A report of a series of seminars*. St. John's College, Oxford.
- Feiman-Nemser, S. (1990). Teacher Preparation: structural and conceptual alternatives. In W. Houston (Ed.), *Handbook of Research on Teacher Education* (pp. 212-233). New York: Macmillan.
- Feiman-Nemser, S., & Remillard, J. (1996). Perspectives on learning to teach. In F.B. Murray (Ed.), *The teacher educator's handbook* (pp. 63–91). San Francisco: Jossey-Bass.
- Fishman, B., Marx, R., Best, S., & Tal, R. (2003). Linking teacher and student learning to improve professional development in systemic reform. *Teaching and Teacher Education*, 19(6), 643-658.
- Forde, C., McMahon, M., McPhee, A., & Patrick, F. (2006). *Professional development, reflection and enquiry*. London: Sage Publications.
- Foyster, J. (1990). *Getting to Grips with Competency-Based Training and Assessment*. Leabrook, Australia: TAFE National Centre for Research and Development, ERIC: ED 317849.
- Frykholm, J.A. (1998). *Beyond supervision: Learning to teach mathematics in community*. *Teaching and Teacher Education*, 14(3), 305–322.
- Fullan, M. (1992). *Successful school improvement*. Bristol, PA: Open University Press.
- Fullan, M. G., & Miles, M. B. (1992). Getting reform right: What works and what doesn't. *Phi Delta Kappan*, 73(10), 745-752.
- Further Education National Training Organization (FENTO). (2001). *Further educational sector: Workforce development plan—Consultation version*. London: Further Education National Training Organization.
- Further Education Unit. (1986). *Investing in change: An appraisal of staff development needs for the delivery of modernized occupational training*. London: FEU.
- Gage, N.L. (1978). *The scientific basis for the art of teaching*. New York: Teachers College Press.
- Garet, M.S., Porter, A.C., Desimone, L., Birman, P.F., & Yoon, K.S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal*, 38(4), 915-945.
- Gilliss, G. (1988) Schön's Reflective Practitioner: a model for teachers? In P. Grimmett & G. Erickson (Eds), *Reflection in Teacher Education* (pp.). New York: Columbia, University Teachers' College Press.
- Gilson, J. (1989). Reconstructive reflective teaching: a review of literature, *ERIC ED 327 481*.
- Gliessman, D., Pugh, R., Dowden, D., & Hutchins, T. (1988). Variables influencing the acquisition of a generic teaching skill. *Review of Educational Research*, 58(1), 25-46.

- Golby, M., & Viant, R., (2007). Means and ends in professional development. *Teacher Development*, 11(2), 237–243.
- Goleman, D. (1995). *Emotional Intelligence*. New York: Bantam Books.
- Gore, J., & Zeichner, K. (1991). Action Research and Reflective Teaching in Preservice Teacher Education: A Case Study from the United States. *Teaching and Teacher Education*, 7(2), 119-136.
- Grant, S. G., Peterson, P.L., & Shojgreen-Downer, A. (1996). Learning to teach mathematics in the context of systemic reform. *American Educational Research Journal*, 33, 509-541.
- Grimmett, P.P., MacKinnon, A.M., Erickson, G.L., & Riecken, T.J. (1990). Reflective practice in Teacher Education. In R.T. Clift, R.W. Houston, & M.C. Pugach, (Eds). *Encouraging Reflective Practice in Education: an analysis of issues and programs* (pp.20-38). New York: Teachers College Press.
- Grossman, P., Wineburg, S., & Woolworth, S. (2001). Toward a theory of teacher community. *Teachers College Record*, 103(6) 942-1012.
- Guskey, T., & Sparks, D. (2002) Linking professional development to improvements in student learning. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, April.
- Guskey, T.R. (2000). *Evaluating professional development*. Thousand Oaks, CA: Corwin Press.
- Guskey, T.R. (2005). Mapping the Road to Proficiency. *Educational Leadership*, 63(3), 32-38.
- Halliday, D. (1996). *Back to Good Teaching: diversity within tradition*. London: Cassell.
- Hargreaves, A. (1994) *Changing Teachers, Changing Times: teachers' work and culture in the postmodern age* (London, New York, and Toronto: Cassell, Teachers' College Press, and University of Toronto Press).
- Hargreaves, A. (1997). Rethinking Educational Change: Going Deeper and Wider in the Quest for Success. In Hargreaves, A. (Eds). *Rethinking Educational Change with Heart and Mind* (pp.1- 26. Alexandria, Virginia: Association for Supervision and Curriculum Development.
- Harrington, H., Quinn-Leering, K., & Hodson, L. (1996). Written case analyses and critical reflection. *Teaching and Teacher Education*, 12(1), 25–37.
- Hatton, N., & Smith, D. (1995). Reflection in Teacher Education: towards definition and implementation. *Teaching and Teacher Education*, 11, 33-49.
- Hawley, W.D., & Valli, L. (1999). The essentials of effective professional development: A new consensus. In G. Sykes & L. Darling-Hammond (Eds.), *Handbook of teaching and policy*. New York: Teachers College.
- Hayes, D. (1997). Teaching competences for qualified primary teacher status in England. *Teacher Development*, 1(2), 165 – 174.
- Heck, R.H., & Moriyama, K. (2010). Examining relationships among elementary schools' contexts, leadership, instructional practices, and added-year outcomes: a regression discontinuity approach. *School Effectiveness and School Improvement*, 21(4), 377–408.
- Hochschild, A.R. (1993). *The managed Heart: Commercialization of Human Feeling*. Berkeley: University of California Press.
- Hodkinson, P. (1995). Professionalism and competence. In P. Hodkinson & M. Issit (Eds), *The challenge of competence: Professionalism through vocational education and training* (pp. 58-69). London: Cassell.
- Hoffman, R.R. (Ed.). (1992). *The psychology of expertise: Cognitive research and empirical AI*. New York: Springer-Verlag.

- Hofman, R.H., Hofman, W.H., & Gray, J.M. (2010). Institutional contexts and international performances in schooling: Comparing patterns and trends over time in international surveys. *European Journal of Education*, 45(1), 153–173.
- Houston, W. (1988). Reflecting on reflection. In H.Waxman et al. (Eds.), *Images of reflection in teacher education* (pp. 2-9). Virginia: ATE.
- Humes, W. M. (1995). From Disciplines to Competencies: the changing face of professional studies in teacher education. *Education in the North*, New Series 3, 39-47.
- Imants, J., and K. van Veen. 2010. Teacher learning as workplace learning. In International Encyclopedia of education, 3rd ed., ed. P. Peterson, E. Baker, and B. McGaw, 569–74. Amsterdam: Elsevier.
- Jackson, M.J., Gallis, H.A., Gilman, S.C., Grossman, M., Holzman, G.B., Marquis, D., & Trusky, S.K. (2007). The Need for Specialty Curricula Based on Core Competencies: A White Paper of the Conjoint Committee on Continuing Medical Education. *Journal of Continuing Education in the Health Professions*, 27(2), 124-128.
- Jang, S., & Kim, N. (2004). Transition from High School to Higher Education and Work in Korea, from the Competency-Based Education Perspective. *International Journal of Educational Development*, 24(6), 691-703.
- Johnston, R., & Badley, G. (1996). The Competent Reflective Practitioner. *Innovation and Learning in Education*, 2, 4-10.
- Johnston, R., & Usher, R. (1996). Adult Learning and Critical Practices: towards a re-theorisation of experience. *Australian Journal of Experiential Learning*, 35, 50-61.
- Jorgensen, H. (2005). Program Prepares Students for Chemical-Processing Careers. *Tech Directions*, 5(1), 16-18.
- Joyce, B., & Showers, B. (1995). *Student achievement through staff development* (2<sup>nd</sup> ed.). White Plains, NY: Longman.
- Joyce, B., Weil, M., & Calhoun, E. (2000). *Models of teaching*. Boston: Allyn & Bacon.
- Kaasila, R., & Lauriala, A. (2012). How do pre-service teachers' reflective processes differ in relation to different contexts? *European Journal of Teacher Education*, 35(1), 77-89.
- Kagan, D. (1992). Professional Growth Among Preservice and Beginning Teachers. *Review of Educational Research*, 62, 129-169.
- Kaslow, N.J. (2004). Competencies in Professional Psychology. *American Psychologist*, 59(8), 774-781.
- Katz, G.L., & Raths, D.J. (1984). *Advances in Teacher Education* (Vol. 1). New Jersey: Ablex Publishing Corporation.
- Kelchtermans, G. (1993). Teachers and their Career Story: A Biographical Perspective on Professional Development. In C. Day, J. Calderhead, & P. Denicolo (Eds), *Research on Teacher Thinking: Understanding Professional Development* (pp.198-220). London, UK: The Falmer Press.
- Kennedy, M.M. (1998). *Form and substance in in-service teacher education* (Research moograph no. 13). Arlington, VA: National Science Foundation.
- Killion, J. (1999). *What works in the middle: Results-based staff development*. Oxford, OH: National Staff Development Council.
- King, P.M., & Kitchener, K.S. (1994). *Developing reflective judgment: Understanding and promoting intellectual growth and critical thinking in adolescents and adults*. San Francisco: Jossey-Bass.
- Kliebard, H.M. (1986). *The struggle for the American curriculum*. Boston: Routledge & Kegan Paul.

- Korthagen, F.A. (1988). The influence of learning-orientations on the development of reflective teaching. In J. Calderhead (Ed.), *Teachers' professional learning* (pp.35-50). Philadelphia, PA: Falmer Press.
- Korthagen, F.A. (2001). *Linking practice and theory: The pedagogy of realistic teacher education*. Mahwah, NJ: Lawrence Erlbaum.
- Korthagen, F.A. (2004). In search of the essence of a good teacher: towards a more holistic approach in teacher education. *Teaching and Teacher Education*, 20(1), 77–97.
- Kyriakides, L., & Creemers, B.P.M. (2008). Using a multidimensional approach to measure the impact of classroom-level factors upon student achievement: a study testing the validity of the dynamic model. *School Effectiveness and School Improvement*, 19(2), 183–205.
- Kyriakides, L., Creemers, B.P.M., & Antoniou, P. (2009). Teacher behaviour and student outcomes: Suggestions for research on teacher training and professional development. *Teaching and Teacher Education*, 25(1), 12–23.
- Kyriakides, L., Creemers, B.P.M., & Panayiotou, A. (2012). A Dynamic approach to teacher professional development: The added value of offering INSET courses on a school basis. *Paper presented at the 25th International Congress for School Effectiveness and Improvement (ICSEI) 2012*. Malmö, Sweden, January.
- Last, J., & Chown, A. (1996). Competence-based approaches and initial teacher training for FE. In J. Robson (Ed.), *The professional FE teacher, staff development and training in the corporate college* (pp.20-32). Aldershot: Avebury.
- Lieberman, A. 1996. Creating intentional learning communities. *Educational Leadership* 54(3):51–55.
- Little, J. W. (2006). Professional community and professional development in the learning centered school. (Best practices working paper). Washington, D.C.: National Education Association.
- Little, J.W. (2002). Locating learning in teachers' communities of practice: opening up problems of analysis in records of everyday practice. *Teaching and Teacher Education*, 18, 917-946.
- Livingston, C., & Borko, H. (1989). Expert–novice differences in teaching: A cognitive analysis and implications for teacher education. *Journal of Teacher Education*, 40, 36–42.
- Loucks-Horsely, S., Hewson, P.W., Love, N., & Stiles, K.E. (1998). *Designing professional development for teachers of science and mathematics*. Thousand Oaks, CA: Corwin.
- Loucks-Horsley, S., & Matsumoto, C. (1999). Research on professional development for teachers of mathematics and science: The state of the scene. *School Science and Mathematics*, 99(5), 258–271.
- Loughran, J.J. (1996). *Developing Effective Practice: learning about teaching and learning through modelling*. London: Falmer Press.
- Loughran, J.J. (2002). Effective reflective practice. In search of meaning in learning about teaching. *Journal of Teacher Education*, 53(1), 33–43.
- Lowyck, J. (1978). *Process analysis of teaching behaviour*. Leuven: Universiteit Leuven.
- Luttenberg, J., & T. Bergen. (2008). Teacher reflection: The development of a typology. *Teachers and Teaching: Theory and Practice*, 14(5/6), 543–66.
- Lyle, S. (1996). The education of reflective teachers. *Journal of Teacher Development*, 5, 4–11.
- McCaleb, J., Borko, H., & Arends, R. (1992). Reflection, research and repertoire in the Masters certification program, in Valli, L. (Eds) *Reflective Teacher Education: Cases*.

- McLaughlin, M.W., & Talbert, J.E. (2001) *Professional Communities and the Work of High School Teaching* (Chicago, IL, University of Chicago Press).
- McNamara, D. (1990). Research on Teachers' Thinking: its contribution to educating student teachers to think critically. *Journal of Education for Teaching*, 16(2), 147-160.
- Muijs, D. (2008). Widening opportunities? A case study of school-to-school collaboration in a rural district. *Improving Schools*, 11(1), 61-73.
- Mulder, M., Weigel, T., & Collins, K. (2007). The Concept of Competence in the Development of Vocational Education and Training in Selected EU Member States: A Critical Analysis. *Journal of Vocational Education and Training*, 59(1), 67-88.
- Munby, H., & Russell, T. (1990). Metaphor in the study of teachers' professional knowledge. *Theory into Practice*, 29(2), 116-121.
- Nicolaidou, M., & Petridou, A. (2011). Evaluation of CPD programmes: challenges and implications for leader and leadership development. *School Effectiveness and School Improvement*, 22(1), 51-85.
- Noddings, N. (1995). *Philosophy of education*. Oxford: Westview Press.
- Norton RE. (1987). Competency-Based Education and Training: A Humanistic and Realistic Approach to Technical and Vocational Instruction. *Paper presented at the Regional Workshop on Technical/Vocational Teacher Training in Chiba City*. Japan, ERIC: ED 279910.
- Odden, A., & Kelley, C. (1997). *Paying teachers for what they know and do*. California: Corwin Press.
- Oja, S. N., & Smulyan, L. (1989). Collaborative action research: A developmental approach. Philadelphia: The Falmer Press.
- Ollin, R. (2002). Professionals or Prisoners? The Competency-based approach to professional development. In G. Trorey & C. Cullingford (Eds), *Professional Development and Institutional needs* (pp.117-142). Hampshire, England: Ashgate Publishing.
- Ottesen, E. (2007). Reflection in teacher education. *Reflective practice*, 8(1), 31-46.
- Patrick, F., Forde, C., & McPhee, A. (2003). Challenging the "New Professionalism": from managerialism to pedagogy? *Journal of In-service Education*, 29(2), 237-254.
- Putnam, R.T., & Borko, H. (1997). Teacher learning: Implications of new views of cognition. In B.J. Biddle, T.L. Good, & I.F. Goodson (Eds.), *International handbook of teachers and teaching*, Vol. 2, (pp. 1223-1296). Dordrecht, The Netherlands: Kluwer.
- Putnam, R.T., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning? *Educational Researcher*, 29(1), 4-15.
- Richards B. (1985). Performance Objectives as the Basis for Criterion-Referenced Performance Testing. *Journal of Industrial Teacher Education*, 22(4), 28-37.
- Richardson, V. (1989). The evolution of reflective teaching and teacher education. In R. Clift, W.R. Houston, & M. Pugach (Eds), *Encouraging reflective practice: An examination of issues and exemplars* (pp.3-19). New York: Teachers College Press.
- Richardson, V., & Anders, P. (1994). Staff development and the study of teacher change. In V. Richardson (Ed.), *A theory of teacher change and the practice of staff development* (pp.159-180). New York: Teachers College Press.
- Riley-Tillman, T.C., & Eckert, T.L. (2001). Generalization programming and school based consultation: An examination of consultees' generalization of consultation related skills. *Journal of Educational & Psychological Consultation*, 12, 217-241.
- Robson, J. (1998). A profession in crisis: status, culture and identity in the further education college. *Journal of Vocational Education and Training*, 50(4), 585 – 607.

- Rodgers, C. (2002). Defining reflection: another look at John Dewey and reflective thinking. *Teachers College Record*, 104(4), 842–866.
- Roland, E. (2011). The broken curve: Effects of the Norwegian manifesto against bullying. *International Journal of Behavioral Development*, 35(5), 383–388.
- Rose, D.J., & Church, R.J. (1998). Learning to teach: The acquisition and maintenance of teaching skills. *Journal of Behavioral Education*, 8, 5-35.
- Ross, D. (1989). First steps in developing a reflective approach. *Journal of Teacher Education*, 40, 22-30.
- Ross, D., Johnson, M., & Smith, W. (1992). Developing a professional teacher. In Valli, L. (Eds), *Reflective Teacher Education: Cases and Critiques* (pp.24-39). New York: SUNY Press.
- Sammons, P. (2009). The dynamics of educational effectiveness: a contribution to policy, practice and theory in contemporary schools. *School Effectiveness and School Improvement*, 20(1), 123–129.
- Sampson, D., Karampiperis, P., & Fytros, D. (2007). Developing a Common Metadata Model for Competencies Description. *Interactive Learning Environments*, 15(2), 137-150.
- Schoenfeld, A.H. (1998). Toward a theory of teaching in context. *Issues in Education*, 4(1), 1–94.
- Schon, D.A. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.
- Scott, C., & Dinham, S. (2002). The beatings will continue until quality improves: Carrots and sticks in the search for educational improvement. *Teacher Development*, 6(1), 15-31.
- Seago, N. (2004). Using video as an object of inquiry for mathematics teaching and learning. In J. Brophy (Ed.), *Using video in teacher education: Advances in research on teaching, Volume 10* (pp. 259–286). Orlando, FL: Elsevier, LTD.
- Seidel, T., & Shavelson, R. J. (2007). Teaching effectiveness research in the past decade: The role of theory and research design in disentangling meta-analysis research. *Review of Educational Research*, 77, 454-499.
- Sharpe, K. (1997). Mr Gradgrind and Miss Beale: old dichotomies, inexorable choices and what shall we tell the students about primary teaching methods, *Journal of Education for Teaching*, 23, 69-83.
- Shields, P.M., Marsh, J.A., & Adelman, N.E. (1998). *Evaluation of NSF's Statewide Systemic Initiatives (SSI) Program: The SSIs' impacts on classroom practice*. Menlo Park, CA: SRI.
- Shulman, L. (1987). Knowledge and teaching: foundations of the new reform. *Harvard Educational Review*, 57(1), 1–22.
- Shulman, L.S. (1988). The Dangers of Dichotomous Thinking in Education. In P. Grimmett & G. Erickson (Eds), *Reflection in Teacher Education* (pp.31-46). New York: Columbia University Teachers' College Press.
- Sizer, T. R. (1992). *Horace's school: Redesigning the American high school*. Boston:Houghton Mifflin.
- Slavin, R. (2002) "Evidence-based education policies: Transforming educational practice and research." *Educational Researcher*, 31(7), 15-21.
- Smith, D. (1991a). Educating the Reflective Curriculum Practitioner. *Education Action*, 2(1), 28-37.
- Smith, D. (1991b). Educating the Reflective Practitioner in Curriculum. *Curriculum*, 12(2), 115-124.

- Smith, D., & Hatton, N. (1992a). Towards Critical Reflection in Teacher Education. *Paper presented to the Annual Conference of the Australian Teacher Education Association*. Ballina, July 1992.
- Smith, D., & Hatton, N. (1992b). Towards reflection in teacher education. What counts as Evidence? *A Paper Presented at the Annual Conference of the Australian Association for Research in Education*. Deakin University, November, 1992.
- Smith, D., & Lovatt, T. (1991). *Curriculum: Action on Reflection* (2nd ed.). Wentworth Falls: Social Science Press.
- Smith, M.S., & O'Day, J. (1991). Systemic school reform. In S. Fuhrman & B. Malen( Eds.), *The politics of curriculum and testing*( pp. 233-268). Philadelphia: Falmer Press.
- Smylie, M.A. (1995). Teacher learning in the workplace: Implications for school reform. In T. R. Guskey, & M. Huberman (Eds.), *Professional development in education: New paradigms and practices* (pp. 92–113). New York: Teachers College Press.
- Smyth, J. (1991) *Teachers as Collaborative Learners* (Milton Keynes, Open University Press).
- Smyth, J. (1992). Teachers' work and the politics of reflection. *American Educational Research Journal*, 29(2), 267-300.
- Sockett, H. (1993). *The moral base for teacher professionalism*. New York: Teachers College Press.
- Somekh, B. (1995). The contribution of action research to development in social endeavours: A position paper on action research methodology. *British Educational Research Journal*, 21, 339-355.
- Spady, W.G. (1977). *Competency based education: a bandwagon in search of a definition*. *Educational Researcher*, 6, 9-14.
- Sparks-Langer, G., & Colton, A. (1991). Synthesis of Research on Teachers' Reflective Thinking. *Educational Leadership*, 48, 37-44.
- Spillane, J. P. (1999). External reform initiatives and teachers' efforts to reconstruct practice: The mediating role of teachers' zones of enactment. *Journal of Curriculum Studies*, 31, 143–175.
- Sprinthall, N., Reiman, A., & Thies-Sprinthall, L. (1996). Teacher professional development. In J. Sikula, T. Buttery, & E. Guyton (Eds.), *Handbook of research on teacher education* (2nd ed., pp. 666–703). New York: Macmillan.
- Stenhouse, L. (1975). *An Introduction to Curriculum Research and Development*. London: Heinemann.
- Stephens, P., Tonnessen, F., & Kyriacou, C. (2004). Teacher Training and Teacher Education in England and Norway: A comparative study of policy goals. *Comparative Education*, 40(1), 109 – 130.
- Sternberg, R. J., & Ben-Zeev, T. (2001). *Complex cognition: The psychology of human thought*. London: Oxford University Press.
- Sternberg, R. J., Forsythe, G. B., Hedlund, J., Horvath, J. A., Wagner, R. K., Williams, W. M., Snook, S. A., & Grigorenko, E. L. (2000). *Practical intelligence in everyday life*. New York: Cambridge University Press.
- Stoiber, K. (1991). The Effect of Technical and Reflective Instruction on Pedagogical Reasoning and Problem Solving. *Journal of Teacher Education*, 42(2), 131-139.
- Storey, A. & Hutchinson, S. (2001). The meaning of teacher professionalism in a quality control era. In F. Banks & A. Shelton Mayes (Eds), *Early Professional Development for Teachers* (pp. 41- 53). London: David Fulton.

- Supovitz, J. A. (2001). Translating teaching practice into improved student performance. In S. H. Fuhrman (Ed.), *From the capitol to the classroom: Standards-based reform in the states*. 100th Yearbook of the National Society for the Study of Education, Part II (pp. 81–98). Chicago, IL: University of Chicago Press.
- Supovitz, J.A., & Turner, H.M. (2000). The effects of professional development on science teaching practices and classroom culture. *Journal of Research in Science Teaching*, 37(9), 963-980.
- Supovitz, J.A., Mayer, D.P., & Kahle, J.B. (2000). Promoting inquiry-based instructional practice: The longitudinal impact of professional development in the context of systemic reform. *Educational Policy*, 14(3), 331-356.
- Tanner, D., & Tanner, L. (1990). *History of the school curriculum*. NY: Macmillan.
- Telese, J. A. (2008, November). *Teacher professional development in mathematics and student achievement: A NAEP 2005 analysis*. Paper presented at the annual meeting of the School Science and Mathematics Association, Raleigh, NC.
- Thomson P. (1991). *Competency-Based Training: Some Development and Assessment Issues for Policy Makers*. TAFE National Centre for Research and Development: Leabrook, Australia. ERIC: ED 333231.
- Tickle, L. (2001). Professional Qualities and Teacher Induction. *Journal of In-Service Education*, 27(1), 51 – 64.
- Timperley, H., Wilson, A., Barrar, H., & Fung, I. (2007). *Teacher professional learning and development. Best Evidence Synthesis Iteration*. Wellington, New Zealand: Ministry of Education.
- Tom, A. (1985). Inquiring into inquiry-oriented teacher education. *Journal of Teacher Education*, 36(5), 35-44.
- Trorey, G. (2002). Introduction: Meeting the needs of the individual and the institution. In G. Trorey & C. Cullingford (Eds), *Professional Development and Institutional needs* (pp.1-14). Hampshire, England: Ashgate Publishing.
- Tuxworth, E.N. (1982) *Competency in Teaching: a review of competency and performance-based staff development* (London, FEU Research Development Units).
- Van Veen, K., Zwart, R., & Meirink, J. (2011). What makes teacher professional development effective? A literature review. In M. Kooy & K. Van Veen, (Eds). *Teacher learning that matters: International perspectives* (pp.3-21). Routledge Research in Education: London:Routledge.
- Walberg, H.J. (1986). Synthesis of research on teaching. In M.C. Wittrock (Ed.), *Handbook of Research on Teaching*, 3rd ed. (pp. 214-229). New York: Macmillan.
- Watson A. (1990). *Competency-Based Vocational Education and Self-Paced Learning*, Monograph Series. Technology University: Sydney, Australia. ERIC: ED 324443.
- Weber, W.A. (1972). Competency-based teacher education. In W.R. Houston (Eds.), *Strategies and Resources for Developing a Competency-based Teacher Education* (pp.21-26). New York: New York State Education Department.
- Weiss, I.R., Montgomery, D.L., Ridgway, C.J., & Bond, S.L. (1998). *Local systemic change through teacher enhancement: Year three cross-site report*. Chapel Hill, NC: Horizon Research, Inc.
- Whitty, G., & Willmott, E. (1991). Competence-based teacher education: approaches and issues. *Cambridge Journal of Education*, 21(3), 309- 318.
- Wilks, R. (1996). Classroom management in primary schools: A review of the literature. *Behaviour Change*, 13(1), 20–32 1996.



- Wilson, S.M., & Berne, J. (1999). Teacher learning and the acquisition of professional knowledge: An examination of research on contemporary professional development. In A. Iran-Nejad & C.D. Person (Eds.), *Review of Research in Education* (pp. 173-209). Washington, D.C.: American Educational Research Association.
- Winitzky, N., & Arends R. (1991). Translating Research into Practice: the effects of various forms of training and clinical experience on preservice students' knowledge, skill and reflectiveness. *Journal of Teacher Education*, 42, 52-65.
- Wragg, E.C. (1993). *Primary Teaching Skills*. New York: Routledge.
- Wubbels, Th., & Korthagen, F. (1990) The Effects of a Preservice Teacher Education Program for the Preparation of Reflective Teachers. *Journal of Education for Teaching*, 16, 29-43.
- Yoon, K.S., Garet, M., Birman, B., & Jacobson, R. (2007). *Examining the effects of mathematics and science professional development on teachers' instructional practice: Using professional development activity log*. Washington, DC: Council of Chief State School Officers.
- Zeichner, K. (1986). Preparing Reflective Teachers: An Overview of Instructional Strategies which have been employed in Preservice Teacher Education. *International Journal of Educational Research*, 2(5), 565-75.
- Zeichner, K. (1990). Changing Directions in the Practicum: looking ahead to the 1990's. *Journal of Education for Teaching*, 16(2), 105-131.
- Zeichner, K., & Liston. D. (1996). *Reflective teaching: An introduction*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Zeichner, K.M. (1983). Alternative paradigms of teacher education. *Journal of Teacher Education*, 34(3), 3-9.
- Zeichner, K.M. (1987). Preparing reflective teachers: An overview of instructional strategies which have been employed in preservice teacher education. *International Journal of Educational Research*, 11(5), 565-575.
- Zeichner, K.M., & Liston, D.P. (1987). Teaching student teachers to reflect. *Harvard Educational Review*, 57(1), 23-48.
- Zwart, R.C., Wubbels, T., Bergen, T., Bolhuis, S. (2009). Which Characteristics of a Reciprocal Peer Coaching Context Affect Teacher Learning as Perceived by Teachers and Their Students? *Journal of Teacher Education*, 60(3), 243-257.

