

HANDBOOK OF THE RESEARCH PROJECT

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

**DESIGNING EVIDENCE-BASED STRATEGIES AND ACTIONS TO
PROMOTE QUALITY IN EDUCATION**

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EUROPEAN
SCIENCE
FOUNDATION

ECRP European Collaborative
Research Projects in the Social Sciences

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Chapter 1

Developing a Dynamic Theory of Educational Effectiveness to Promote Quality in Education: A European Project

Introduction

Although European policies promote the development of a knowledge-base society, international comparative studies reveal that countries of competing economic zones, such as Pacific Rim Countries, still outperform educationally. Also between European countries large differences exist in the average achievement level and in offering equal opportunities to diverse student populations. These findings reveal the importance of identifying effective factors at school and system level which are associated with learning outcomes. The identification of these factors may help researchers, policy makers, educational leaders and teachers to develop ways to improve effectiveness in education across Europe. In this context, a European project was conducted aiming not only to generate a theory about the dynamic perspective of effective education but also to come up with possibilities of establishing an evidence-based and theory-driven approach in policy making. This implies that the findings of this project are expected to help policy makers at different levels and schools design and implement reform policies which will improve practice and learning outcomes. More specifically, the main aims of this project are as follows:

1. To investigate and explain differences between European countries and schools within countries in the average and differential added value of primary education for different outcomes of schooling, taking into account diversity of student intake.
2. To inform national and European policy makers about effective practices at system (country), school and classroom level contributing to the improvement of educational quality in terms of higher average achievement and better educational opportunities for disadvantaged students.
3. To develop further and test the validity of the dynamic model of educational effectiveness, especially in relation to the diversity of student intake, processes, and prospective outcomes in order to improve the effectiveness of education, based on scientific validated model(s).
4. To elaborate on the system level factors of the dynamic model, explore their relationships with educational outcomes and the school and classroom level factors, and draw implications for educational policy and research.

To achieve these aims, we draw from Educational Effectiveness Research (EER). EER can be seen as a conglomerate of research in different areas: research on teacher behaviour, curriculum, grouping procedures, school organisation, and educational policy. The main aim of EER is to investigate which factors, within teaching, curriculum, and learning environment at different levels such as the classroom, the school, and the above-school levels can directly or indirectly explain the differences in the outcomes of students, taking into account background characteristics, such as ability, Socio

Economic Status (SES), and prior attainment (Raudenbush & Bryk, 1986). During the last four decades, EER has been improved considerably by working on criticisms of research design, improvements in sampling techniques, and improvements in statistical techniques. Methodological advances, particularly the availability of software for the analysis of multilevel data, have enabled more efficient estimates of teacher and school effects on student achievement (Goldstein, 2003). There is also substantial agreement on appropriate methods of estimating school differences/effects and the kinds of data required for valid comparisons (Creemers, Kyriakides, & Sammons, 2010). In regard to the theoretical component of the field, progress was made creating more precise definitions of the concepts used and outlining clearer relations between them (e.g., Levin & Lezotte, 1990; Mortimore, Sammons, Stoll, Lewis, & Ecob, 1988; Scheerens, 1992; Teddlie & Reynolds, 2000). However, there is a shortage of well developed theoretical models from which researchers in the area of educational effectiveness can build theories and the problem is aggravated by infrequent use of existing models (Scheerens & Bosker, 1997).

In this context, the dynamic model of educational effectiveness (Creemers & Kyriakides, 2008) has recently been developed. The dynamic model attempts to define the dynamic relations between the multiple factors found to be associated with educational effectiveness (Sammons, 2009). An essential difference of the dynamic model with other theoretical models of effectiveness (e.g., Creemers, 1994; Scheerens, 1992; Stringfield & Slavin, 1992) is concerned with its attempt to establish stronger links between EER and improvement of school practice. The model reflects the complex nature of educational effectiveness by:

- taking into account the new goals of education (This implies that the model is not restricted to explaining student outcomes in terms of basic skills, but also in terms of skills like reasoning, conceptual understanding, meta-cognitive and self-regulation. Additionally new theories of teaching and learning are used in order to specify factors at classroom and school level associated with these new learning outcomes),
- pointing out the importance of factors operating at different levels,
- searching for grouping of factors within and between levels,
- using five dimensions to measure the functioning of each factor: frequency, stage, focus, quality and differentiation (In this way both quantitative and qualitative characteristics of each factor are taken into account), and
- incorporating results of research into differential effectiveness in relation to promoting quality and equity in education.

Although this framework is more complex than the other models of effectiveness, it is based upon research evidence. Empirical support to the validity of the model has been provided through three national studies testing the effects of school and classroom level factors upon achievement of both cognitive and affective outcomes and through two quantitative syntheses of studies on teacher and school effectiveness conducted during the last three decades (Creemers & Kyriakides, 2010a;

Kyriakides & Christoforou, 2011; Kyriakides & Creemers, 2008; Kyriakides & Creemers, 2009; Kyriakides, Creemers, Antoniou, & Demetriou, 2010). These studies reveal that the basic elements of the model are relevant to effectiveness in at least one country and can also provide the basis for an evidence-based and theory-driven approach to improvement of education (Kyriakides & Creemers, 2008). An international study may provide further support to the dynamic model and also investigate some further issues concerned with the use of the model for establishing an evidence-based and theory-driven approach to school improvement. Thus, the project that is reported in this handbook investigates the extent to which the dynamic model can be used as a starting point for establishing an evidence-based and theory-driven approach to school improvement.

Research Design

To conduct this European project, a longitudinal design was used in all countries which helps us draw credible conclusions about causal relations between factors and outcomes. Specifically, in each participating country (Belgium/Flanders, Cyprus, Germany, Greece, Ireland, and Slovenia) we drew a sample of at least 50 primary schools and administered tests in mathematics and science to students when they were at the beginning (September 2010) and at the end of grade 4 (May 2011) (n=10742). For the construction of the tests, permission was obtained from IEA to use the released items of TIMSS 2007. During the school year 2010-2011, data on the following factors of the dynamic model were also collected.

Regarding, the student level factors, we restricted ourselves to prior-knowledge, SES, ethnicity and gender. These factors explain the majority of variance at student level and can be used to search for differential effects of the classroom and school factors. Implications for policies on equal educational opportunities can also be drawn. Moreover, all classroom and school level factors of the model were measured. Concerning the classroom factors, we adapted the student questionnaires which have been developed and tested in the studies mentioned above. Similarly, the teacher questionnaire of these studies has been adapted in order to measure the school factors. The educational policy at system level and its impact on the functioning of the teacher and school factors was also measured through: a) content analysis of policy documents, b) semi-structured interviews with policy makers, c) questionnaires to school leaders on the perceived impact of the policy. Analysis of data provided support to the model and supports the main assumptions of the proposed dynamic theory of educational effectiveness. It also shows that the included factors are associated with student achievement in mathematics and science. These findings emerged through conducting across- and within-country analyses.

The Aims and the Structure of the Handbook

In this handbook we provide suggestions to schools on establishing an evidence-based and theory-driven approach to promote quality in education. These suggestions are based on the theoretical framework of this project and the evidence supporting the main assumptions of the dynamic theory on educational effectiveness. More specifically, the main elements of the dynamic model of educational effectiveness are presented in Chapter 2. In the next chapter, we refer to a dynamic approach to school improvement which makes use of the dynamic model for establishing strategies and action plans that are based on a valid theory and on empirical evidence concerned with the improvement priorities of the schools. Finally, in Chapter 4, we provide some practical suggestions to schools on how this dynamic approach to school improvement can be implemented. Specifically, we offer guidelines to schools on how to establish School Self-Evaluation (SSE) mechanisms measuring the functioning of school factors and identify priorities for improvement. By making use of the knowledge-base of EER, schools are also provided with guidelines on how to develop strategies and action plans to address their improvement priorities. Thus, the main aim of this handbook is to encourage readers, when faced with different challenges/problems, to uncover and exploit the available knowledge-base of EER, as this is described by the dynamic model, and to act with flexibility in using the dynamic approach to design, implement and evaluate policies and action plans for promoting quality in education.

Chapter 2

The dynamic model of educational effectiveness: An Overview and Empirical Evidence Introduction

Introduction

The development of the dynamic model is based on the results of a critical review of the main findings of EER and of a critical analysis of theoretical models of educational effectiveness which were developed during the 1990s (e.g., Creemers, 1994; Scheerens, 1992; Stringfield & Slavin, 1992). Moreover, studies testing the validity of the comprehensive model of educational effectiveness (Creemers, 1994), which is considered as the most influential theoretical construct in the field (Teddle & Reynolds, 2000), reveal that some empirical support to the comprehensive model has been provided (e.g., de Jong, Westerhof, & Kruiter, 2004; Driessen & Slegers, 2000; Kyriakides, 2005a; Reezigt, Guldmond, & Creemers, 1999). It is also demonstrated that some characteristics of the comprehensive model can be seen as starting points for the development of the dynamic model of educational effectiveness, which attempts to address weaknesses of the previous models (Kyriakides, 2008). The following section refers to the main assumptions and elements of the dynamic model. This is followed by a discussion of the main factors included in the model which are presented in the next section. In the final section of this chapter, we briefly refer to studies providing empirical support to the main assumptions of the model.

The Rationale of the Model

The dynamic model is based on the following three main assumptions. First, it is taken into account that most of the effectiveness studies are exclusively focused on language or mathematics rather than on the whole school curriculum aims (cognitive, psychomotor, metacognitive and affective). This suggests that the models of EER should take into account the new goals of education, and relate this to their implications for teaching and learning (van der Werf, Opdenakker, & Kuyper, 2008). This means that the outcome measures should be defined in a broader way rather than restricting to the achievement of basic skills. It also implies that new theories of teaching and learning should be used in order to specify variables associated with quality of teaching.

Second, an important constraint of the existing approaches of modelling school effectiveness is the fact that the whole process does not contribute significantly to the improvement of school effectiveness. Thus, the dynamic model is established in a way that helps both policy makers and practitioners to improve educational practice through rational decisions concerning the optimal fit of the factors within the model and the present situation in the schools or educational systems (Creemers & Kyriakides, 2010c).

Finally, the dynamic model should not only be parsimonious but should also be able to describe the complex nature of educational effectiveness. This implies that the model is based on specific theory, but at the same time some of the factors included in the major constructs of the model are expected to be interrelated within and/or between levels.

The Essential Characteristics of the Dynamic Model

There are five main characteristics of the dynamic model. Firstly, the dynamic model takes into account the fact that effectiveness studies conducted in several countries reveal that the influences on student achievement are multi-level (Teddle & Reynolds, 2000). Therefore, the model is multi-level in nature and refers to factors operating at the four levels shown in Figure 2.1. Figure 2.1 reveals the main structure of the dynamic model. Teaching and learning situations are emphasised and the roles of the two main actors (i.e., teacher and student) are analysed. Above these two levels, the dynamic model also refers to school-level factors. It is expected that school-level factors influence the teaching-learning situation by developing and evaluating the school policy on teaching and creating a learning environment at the school. The system level refers to the influence of the educational system through a more formal way, especially through developing and evaluating the educational policy at the national/regional level. It also takes into account that the teaching and learning situation is influenced by the wider educational context in which students, teachers, and schools are expected to operate. Factors such as the values of the society for learning and the importance attached to education play an important role, both in shaping teacher and student expectations, as well as in the development of the perceptions of various stakeholders about effective teaching practice.

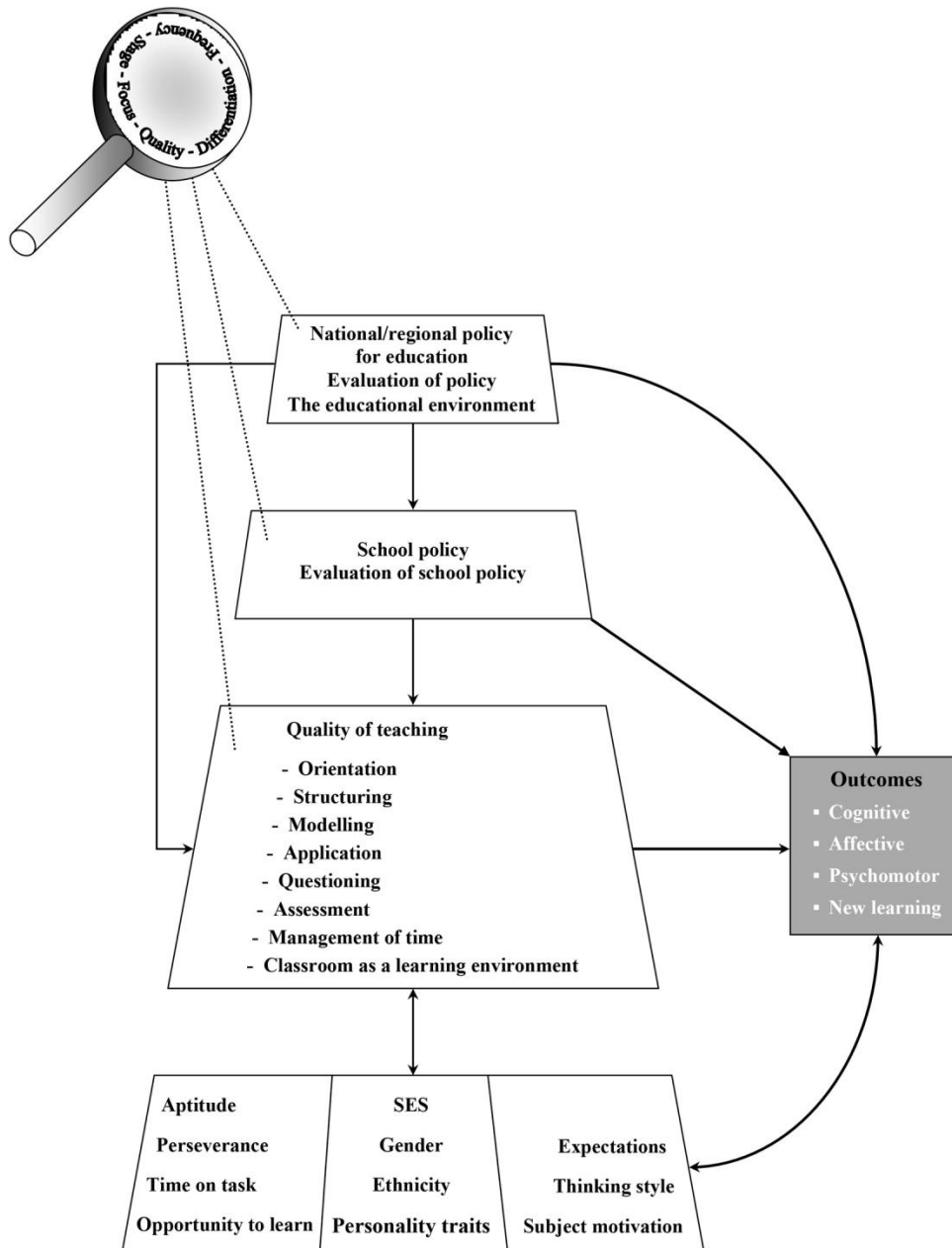


Figure 2.1: The dynamic model of educational effectiveness

Second, the dynamic model (Figure 2.1) does not only refer to factors situated at the four levels of the model and each level's association with student outcomes. The interrelations between the components of the model are also illustrated. In this way, the model supports the notion that factors at the school and system level have both direct and indirect effects on student achievement since they are able to influence not only student achievement but also teaching and learning situations.

Third, the dynamic model supports that the impact of the school and system level factors has to be defined and measured in a different way than the impact of classroom level factors. Policy on teaching and actions taken to improve teaching practice must be measured over time and in relation to

the weaknesses that occur in a school. The assumption is that schools and educational systems which are able to identify their weaknesses and develop a policy on aspects associated with teaching and their School Learning Environment (SLE) are also able to improve the functioning of classroom level factors and their effectiveness status. Only changes in those factors for which schools face significant problems are expected to be associated with the improvement of school effectiveness. This implies that the impact of school and system level factors depends on the current situation of the objects under investigation (Creemers & Kyriakides, 2009). This characteristic of the dynamic model does not only reveal an essential difference in the nature of this model with all the integrated models of EER but it also has some significant implications for using the dynamic model for improvement purposes. Basically, it implies that schools should identify their improvement priorities and develop more focused interventions that are addressing them rather than establishing strategies that address all school factors.

Fourth, the model assumes that there is a need to carefully examine the relationships between the various effectiveness factors which operate at the same level. Walberg's (1984) model, which is one of the most significant educational productivity models, attempts to illustrate such relationships. Aptitude, instruction and the psychological environment are seen as major direct causes of learning. They also influence one another and are in turn influenced by feedback on the amount of learning that takes place. Walberg's model was tested as a structural equation model on science achievement. The results indicated more complex, indirect relationships (Reynolds & Walberg, 1990). This implies that there is a need to refer to the relationships between the effectiveness factors which operate at the same level. Such approaches to modelling educational effectiveness reveal grouping of factors that make teachers and schools effective. Therefore, strategies for improving effectiveness which are comprehensive in nature may emerge (Creemers & Kyriakides, 2006).

Looking at Qualitative Characteristics of Factors to Provide Feedback for Improvement Purposes

Finally, an essential difference of the dynamic model from all the previous models (Creemers, 1994; Scheerens, 1992; Stringfield & Slavin, 1992) is its attempt to look at the qualitative characteristics of factors and provide more precise feedback on how the functioning of factors can be improved. The dynamic model is based on the assumption that different dimensions for measuring the functioning of effectiveness factors should be used to collect data and provide constructive feedback to teachers and schools. The integrated models of educational effectiveness (Creemers, 1994; Scheerens, 1992; Stringfield & Slavin, 1992) however do not explicitly refer to the measurement of each effectiveness factor. For example, the comprehensive model of educational effectiveness states that there should be control at school level. This means that goal attainment and the school climate should be evaluated (Creemers, 1994). In line with this assumption, studies investigating the validity of the model revealed

that schools with an evaluation policy focused on the formative purposes of evaluation are more effective (e.g., Kyriakides, 2005b; Kyriakides, Campbell, & Gagatsis, 2000). However, the evaluation policy at school level can be examined not only in terms of its focus on the formative purpose but also in terms of many other aspects of the functioning of evaluation such as the procedures used to design evaluation instruments, the forms of record keeping, and the policy on reporting results to parents and pupils.

Although there are different effectiveness factors and groupings of factors, it is assumed that each factor can be defined and measured using similar dimensions. This approach considers each factor as a multidimensional construct and at the same time to be in-keeping with the parsimonious nature of the model. More specifically, each factor is defined and measured using five dimensions: *frequency*, *focus*, *stage*, *quality*, and *differentiation*. Frequency is a quantitative way to measure the functioning of each effectiveness factor whereas the other four dimensions examine qualitative characteristics of the functioning of each factor at the system/school/classroom level. Using this measurement framework implies that each factor should not only be examined by measuring how frequently the factor is present in the system/school/class (i.e., through a quantitative perspective) but also by investigating specific aspects of the way the factor is functioning (i.e., looking at qualitative characteristics of the functioning of the factor). The use of different measurement dimensions reveals that looking at just the frequency of an effectiveness factor does not help us identify those aspects of the functioning of a factor which are associated to student achievement.

Considering effectiveness factors as multi-dimensional constructs not only provides a better picture of what makes teachers and schools effective but helps us develop specific strategies for improving educational practice (Kyriakides & Creemers, 2008). For example, a teacher may raise questions frequently and provide enough process questions but she/he may not give any feedback to students, or even when he/she gives feedback it is not helpful for students to identify the wrong parts of their answers and find the correct answer. Similarly, a teacher may provide enough structuring tasks but these are too specific and do not help students understand how the previous lesson is related with the present one and how the next lesson will cover issues not dealt by the present one. A brief description of the five dimensions is given below. Also highlighted, is the importance of using these dimensions not only for measurement purposes, but also for providing feedback to teachers and schools for improvement purposes.

First, the *frequency* dimension refers to the quantity that an activity associated with an effectiveness factor is present in a system, school or classroom. This is probably the easiest way to measure the effect of a factor on student achievement and almost all studies used this dimension to define effectiveness factors (see Creemers, Kyriakides, & Sammons, 2010; Teddlie & Reynolds, 2000). However, this dimension may not always be related in a linear way with student outcomes (Heck & Moriyama, 2010). For example, personal monitoring at school level can be measured by taking into account how often the head teachers use a monitoring system to supervise their teachers.

EER should attempt to identify whether this dimension of measuring personal monitoring is not only related directly to student outcomes but also indirectly through teacher behaviour in the classroom. Further, it is questionable whether there is a linear relation between frequency of personal monitoring and both type of outcomes. However, what can be assumed is: after an optimal value of using a monitoring system, this factor may not have an additional effect on outcomes. Moreover, it may even lead to negative effect in teacher behaviour and ultimately in student outcomes.

Second, the factors are measured by taking into account the *focus* of the activities which reveal the function of each factor at classroom, school and system level. Two aspects of focus of each factor are measured. The first refers to the specificity of the activities which can range from specific to general. For example, in the case of school policy on parental involvement, the policy could either be more specific in terms of concrete activities that are expected to take place (e.g., the policy refers to specific hours that parents can visit the school) or more general (e.g., it informs parents that they are welcome to the school but without giving them specific information about what, how and when).

The second aspect of this dimension addresses the purpose for which an activity takes place. An activity may be expected to achieve a single or multiple purposes. In the case of school policy on parental involvement, the activities might be restricted to a single purpose (e.g., parents visit schools to get information about student progress). On the other hand, the activities may be concerned with the achievement of more than one purpose (e.g., parents visit the school to exchange information about children progress and to assist teachers in and outside the classroom).

It is expected that the measurement of the focus of an activity (either in terms of its specificity or in terms of the number of purposes that is expected to achieve) may be related in a curvilinear way with student outcomes. For example, the guidelines on parental involvement which are very general may not be helpful either for parents or teachers in establishing good relations which can result in supporting student learning. On the other hand, a school policy which is very specific in defining activities may restrict the productive involvement of teachers and parents in creating their own ways for implementing the school policy. Similarly, Schoenfeld (1998) suggests that if all the activities are expected to achieve a single purpose then the chances to achieve this purpose are high. However, the effect of the factor might be small due to the fact that other purposes are not achieved and/or synergy may not exist since the activities are isolated. On the other hand, if all the activities are expected to achieve multiple purposes, there is a danger that specific purposes are not addressed in such a way that they can be implemented successfully (Pellegrino, 2004). This example also points to the possibility that an interaction between the two aspects of this dimension may exist.

Third, the stage at which tasks associated with a factor take place is also examined. It is supported that the factors need to take place over a long period of time to ensure that they have a continuous direct or indirect effect on student learning (Creemers, 1994). This assumption is partly based on the fact that evaluations of programmes aiming to improve educational practice reveal that the extent to which these intervention programmes have any impact on educational practice is partly

based on the length of time that the programmes are implemented in a school (e.g., Gray et al., 1999; Stufflebeam & Shinkfield, 1990). Moreover, the importance of using the stage dimension to measure each effectiveness factor arises from the fact that it has been shown that the impact of a factor on student achievement partly depends on the extent to which activities associated with this factor are provided throughout the school career of the student (Slater & Teddlie, 1992). For example, school policy on opportunity to learn (which refers to policy on cancellation of lessons and absenteeism) is expected to be implemented throughout the year and not only through specific regulations announced at a specific point of time (e.g., only at the beginning of the school year). Although measuring the stage dimension gives information about the continuity of the existence of a factor, activities associated with the factor may not necessarily be the same. Therefore, using the stage dimension to measure the functioning of a factor can help us identify the extent to which there is constancy at each level, and flexibility in using the factor during the period that the investigation/measurement takes place (Driessen & Slegers, 2000).

Fourth, the *quality* dimension can be discerned in two different ways. The first one refers to the properties of the specific factor itself, as these are discussed in the literature. For instance, school policy on assessment can be measured by looking at the mechanisms which have been developed in order to establish instruments which meet psychometric standards (e.g., valid, reliable, representative to the content taught). At the same time, this policy both clarifies and guarantees that teachers are expected to make use of the information gathered from assessment. This is in order to meet their students' needs and this gives more emphasis to the formative function of assessment (Black & Wiliam, 1998; Harlen & James, 1997; Kyriakides et al., 2000).

Finally, *differentiation* refers to the extent to which activities associated with a factor are implemented in the same way for all the subjects involved with it (e.g., all the students, teachers, schools). It is expected that adaptation to specific needs of each subject or group of subjects will increase the successful implementation of a factor and will ultimately maximise its effect on student learning outcomes (Sammons, 2010). It can be argued that the dynamic model takes into account the findings of research into differential educational effectiveness (Campbell, Kyriakides, Muijs, & Robinson, 2003; den Brok, van Tartwijk, Wubbels, & Veldman, 2010; Kyriakides, 2007; Nuttall, Goldstein, Prosser, & Rasbach, 1989; Strand, 2010). Specifically, it is acknowledged that the impact of effectiveness factors on different groups of students may vary. As a consequence, differentiation is treated as a measurement dimension and is concerned with the extent to which activities associated with a factor are implemented in the same way for all the subjects involved with it. Although differentiation could be considered a property of an effectiveness factor, it was decided to treat differentiation as a separate dimension of measuring each effectiveness factor rather than incorporate it into the quality dimension. In this way, the importance of taking into account the special needs of each group of students is recognised. Thus, the dynamic model is based on the notion that it is difficult to deny that persons of all ages learn, think, and process information differently.

One way to differentiate instruction is for teachers to teach according to individual student learning needs as these are defined by their background and personal characteristics such as gender, socio-economic status, ability, thinking style, and personality type (Kyriakides, 2007). However, the differentiation dimension does not imply that these groups of students are not expected to achieve the same purposes. On the contrary, adapting the functioning of each factor to the specific needs of each group of students may ensure that all of them will become able to achieve the same purposes (Kyriakides & Creemers, 2011). This argument is partly supported by research into adaptive teaching and the evaluation projects of innovations concerned with the use of adaptive teaching in classrooms (e.g., Houtveen, van der Grift, & Creemers, 2004; Noble, 2004). Moreover, it is acknowledged that the use of differentiation as a measurement dimension does not imply that all instruction has to be individualised since findings on Aptitude Treatment Interaction research reveal that in real classroom situations is neither feasible nor effective to offer only individual tasks during the whole teaching time (Clark & Salomon, 1986; Salomon, 1979).

The Dynamic Model: Factors Operating at Student, Classroom, School, and System Level

This section provides a description of the factors of the model situated at four different levels: *student, classroom, school* and *system/context*. The way these levels and factors are defined is in line with the main principles of the model presented in the previous section. Although the dynamic model is multi-level in nature, more emphasis is given to factors operating at the teacher and the school level since the main aim of EER is to identify factors in education that promote learning. However, it also is stressed that student background characteristics should be taken into account because they explain to a large extent the variance between students in learning and achievement. Moreover, these factors should be taken into account in promoting differentiation at different levels.

A) Student factors

The dynamic model refers to two main categories of background factors operating at the student level which can influence the effectiveness of education. The two categories are:

- a) Sociocultural and economical background variables emerged from the sociological perspective of EER.
- b) Background variables emerged from the psychological perspective of EER.

In addition, variables related to specific learning tasks emerged from the psychological perspective. These are also treated as significant student level factors (see Figure 2.2). Some evidence showing that these variables affect learning is provided in the first part of this section. Moreover, Figure 2.2 shows that a distinction is made among the student-level factors by referring to factors which are unlikely to change (e.g., gender, SES, ethnicity, personality) and factors that may change over time

(e.g., subject motivation and thinking styles). Factors that are likely to change over time are more closely related to the aims of EER. These factors could be treated both as explanatory and as outcome variables. For example, subject motivation may be related with student achievement gains, but it is also likely to change due to the teacher behaviour (Bamburg, 1994). Helping children to increase their motivation could be considered as an affective outcome of schooling (Busato, Prins, Elshout, & Hamaker, 1999; van der Werf et al., 2008). It is also argued that research into differential educational effectiveness could help teachers identify how to adapt their teaching practice to the specific learning needs of groups of students. This in turn will help teachers become more effective (Kyriakides & Creemers, 2006). In this context, relations between factors operating at the student level and factors operating at higher levels, such as the teacher level are expected to exist (Kyriakides, 2008; Teddlie & Reynolds, 2000). Therefore, these should be taken into account for promoting quality and equity in education.

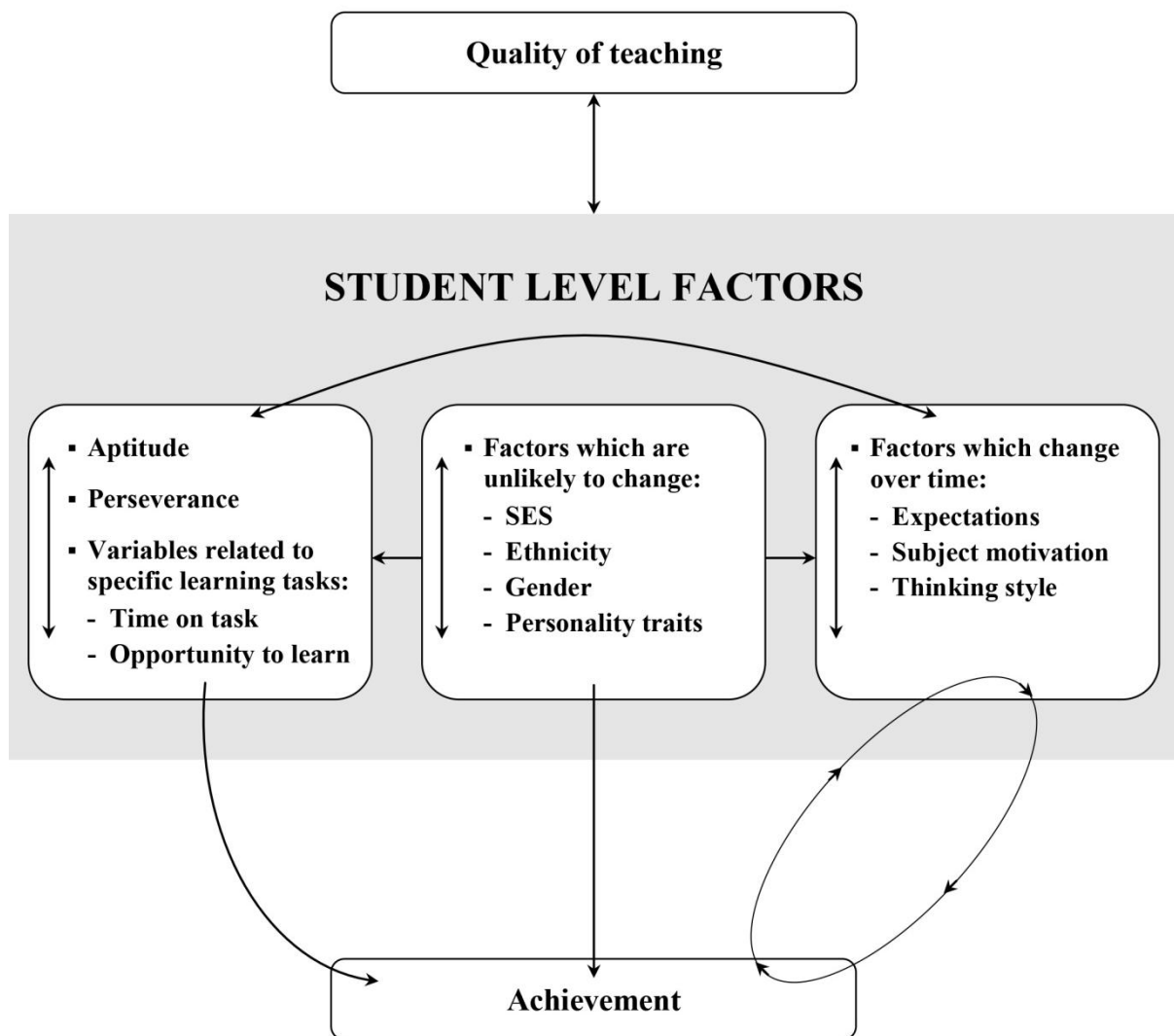


Figure 2.2: Factors of the dynamic model operating at the student level

Socio-cultural and economic background factors

The first group of student level factors refers to the socio-cultural and economical background characteristics of students, such as SES, ethnic background, and gender. Many studies showed that the majority of variance in student outcomes could be explained by student background characteristics like SES, ethnicity and gender (Opdenakker & van Damme, 2006; Sirin, 2005). Thus, these variables are not only treated as student level factors but also highlight the importance of investigating school effectiveness in terms of the equity dimension. For example, the evaluation of any policy promoting equal opportunities could be based on investigating its impact on promoting educational progress of socially disadvantaged students and on reducing unjustifiable gender differences at the school level (Lamb, 1996).

Beyond indicating the importance of treating background variables as student-level factors, and providing suggestions on how research into differential effectiveness could help teachers/schools/systems become more effective, the dynamic model also refers to the importance of looking at relations between these variables. For example, studies showing that there are significant interactions between social groups and sex indicating that the gender effect is not consistent across all social classes can help us evaluate policies on providing equal opportunities and develop them further by taking into account that gender differences are bigger in lower SES groups (Gray, Peng, Steward, & Thomas, 2004; Strand, 2010) and thereby improvement efforts should be concerned with these groups that are facing problems at a higher level.

Finally, it is important to acknowledge that at the level of the classroom, students should be treated as individuals rather than as representing stereotypical groupings, so that the promotion of learning for all students is encouraged. However, at the level of the school or the system, if groups of students are systematically being disadvantaged in their rate of learning in comparison to other groups, as some effectiveness studies in different countries have shown (Beaton, Mullis, Martin, Gonzalez, Kelly, & Smith, 1996; Gorard, Rees, & Salisbury, 2001; Gray et al., 2004; Harskamp, 1988; Kyriakides, 2004), interventions for promoting equity both at the school and the system level should be developed.

Background variables that emerged from the psychological perspective of EER

The dynamic model also refers to five background variables emerged from the psychological perspective of EER which were found to be related with student achievement: aptitude, motivation, expectations, personality, and thinking style (e.g., Bamberg, 1994; Bandura, 1996, 1997; Marsh, 2008; Marsh & Parker, 1984; Pajares, 1999; Walberg, 1986). Aptitude, for example, is seen as one of the most critical background variables associated with student achievement. Aptitude embraces general intelligence and prior learning and is one of the best predictors of performance. Several studies (de Jong et al., 2004; Kyriakides, 2005a) show that the effect of aptitude on student

achievement is even higher than the effect of SES. Similarly motivation and expectations were found to be related with student achievement and need to be considered in projects attempting to improve the quality and equity of education (Baumert & Demmerich, 2001; Kline & Gale, 1977; Kuyper, Dijkstra, Buunk, & van der Werf, 2011; Pajares & Schunk, 2001; Wehrens, Kuyper, Dijkstra, Buunk, & van der Werf, 2010).

Finally, personality characteristics of students (i.e., personality traits and thinking styles) have recently been a particular area of focus since recent effectiveness studies have highlighted these variables as predictors of student achievement (Kyriakides, 2005a). They have also been linked to ways of adapting teaching and assessment approaches to the needs of specific groups of students. For example, teachers may find out that some students managed to perform better in a written test than during the normal teaching lessons and may attribute this result to cheating. However, these students may be introverted and consequently not like to express their ideas publicly and this is not because they don't have something to say but due to the fact that they tend to be shy, and inhibited. In such case, teachers may consider the possibility to address those students to answer a question or express their ideas even if they did not call for attention. As far as the importance of treating measures of thinking style as a predictor of student achievement is concerned, it is important to note that in the search for variables that contribute to school achievement, psychologists have devoted considerable attention to the so-called stylistic aspects of cognition. The idea of a style reflecting a person's typical or habitual mode of problem solving, thinking, perceiving, and remembering was initially introduced by Allport (1937). In the past few decades, the style construct has employed a great deal of research interest, and many theoretical models have been postulated. There are at least three reasons for not only treating personality traits, but also styles associated with the theory of mental self-government (Sternberg, 1988), as student level factors.

First, there are many studies which reveal that measures of thinking styles associated with this theory explain individual differences in performance not attributable to abilities (e.g., Grigorenko & Sternberg, 1997; Zhang & Sternberg, 1998; Zhang, 2001). Second, it has been shown that the thinking styles and personality overlap is limited (Messick, 1996; Sternberg, 1994; Zhang, 2002). This implies that not only intelligence and personality traits, but also thinking styles, should be taken into account in order to explain variation in student achievement. Finally, there is some evidence supporting the existence of differential effectiveness in relation to student personality traits and styles of thinking (Kyriakides, 2005a; Zhang, 2011).

Time on task (time students are really involved in learning tasks)

The impact of time on task on student achievement is also taken into account. The variable time on task refers to the time students are willing to spend on learning and on educational tasks. It is determined not only by motivation and expectations, but also by the time provided by the

school/teacher and by processes at the school and classroom levels. It is also important to note that time on task refers to the time in which students are really involved in learning (provided that this time is filled with opportunities to learn). Therefore, there are several reasons that, in the dynamic model, the variables *time on task* and *opportunity to learn* belong in the same category. An obvious reason is concerned with the fact that both variables refer to specific learning tasks that define the criteria for measuring effectiveness. In addition, these variables belong to the same category because they are not only determined by student background factors but also influence learning directly. Thus, time on task and opportunity to learn are seen as the first steps in the search for intermediary processes (for example, the cognitive processes of students and mediating teacher activities). In the dynamic model, time on task and opportunity to learn are put in an intermediary position. Elements of education at the classroom level, such as the ability of teacher to manage the classroom time, can contribute in an increase in time on task (assuming they are effective) (Kumar, 1991).

Opportunity to learn

The variable *opportunity to learn* refers to the fact that in order to achieve educational outcomes, students should at least have some opportunity to acquire knowledge and skills (Creemers, 1994). Despite the difficulties of measuring opportunity to learn at a classroom, or even at higher level, this variable has been included in international studies conducted by the IEA which show that variations between countries in the opportunity to learn are very large (Campbell & Kyriakides, 2000). Similarly, studies investigating the validity of Creemers' model (e.g., de Jong et al., 2004; Kyriakides, 2005a; Kyriakides et al., 2000; Isac, Maslowski, & van der Werf, 2011) suggest that time spent doing homework and time spent on private tuition could also be seen as measures of the 'opportunity to learn' factor. These measures of the opportunity factor were also found to be closely related with student achievement (e.g., Brookhart, 1997; Trautwein, Koller, Schmitz, & Baumert, 2002). However, it has to be acknowledged that the amount of time students spend voluntarily on specific learning tasks (e.g., mathematics, music, physical education) may not only be seen as a measure of opportunity to learn but may also be an indicator of students' interests and motivation about the subject associated with these tasks. Spending additional time on private tuition or on homework does not necessarily mean that the students make use of this extra time for learning purposes (Kyriakides & Tsangaridou, 2008). Therefore, a distinction is made between learning opportunities offered in the instructional process during and/or after the school time and the actual use of these opportunities that each student makes (see also Creemers, 1994). In this context, the students' use of opportunities to learn is treated as a student level factor whereas the findings of studies investigating the impact of opportunity to learn on student achievement are taken into account in defining factors at teacher, school, and context levels.

B) Classroom factors

At the classroom level, the teacher is an important actor (Kyriakides et al., 2000; Rosenshine & Furst, 1973; Scheerens & Bosker, 1997; Teddlie & Reynolds, 2000). Teacher background characteristics such as gender, age, education, beliefs and motivation are an important topic in theory and research because these characteristics may explain differences between teachers in the way they behave in classrooms (Fraser, 1995). However, these characteristics are not included in the dynamic model as it primarily concentrates on the teaching activities teachers perform in order to initiate, promote, and evaluate student learning. Based on the main findings of teacher effectiveness research (e.g., Brophy & Good, 1986; Doyle, 1986; Emmer & Stough, 2001; Muijs & Reynolds, 2001; Rosenshine & Stevens, 1986), the dynamic model refers to factors which describe teachers' instructional role and are associated with student outcomes (see Figure 2.3).

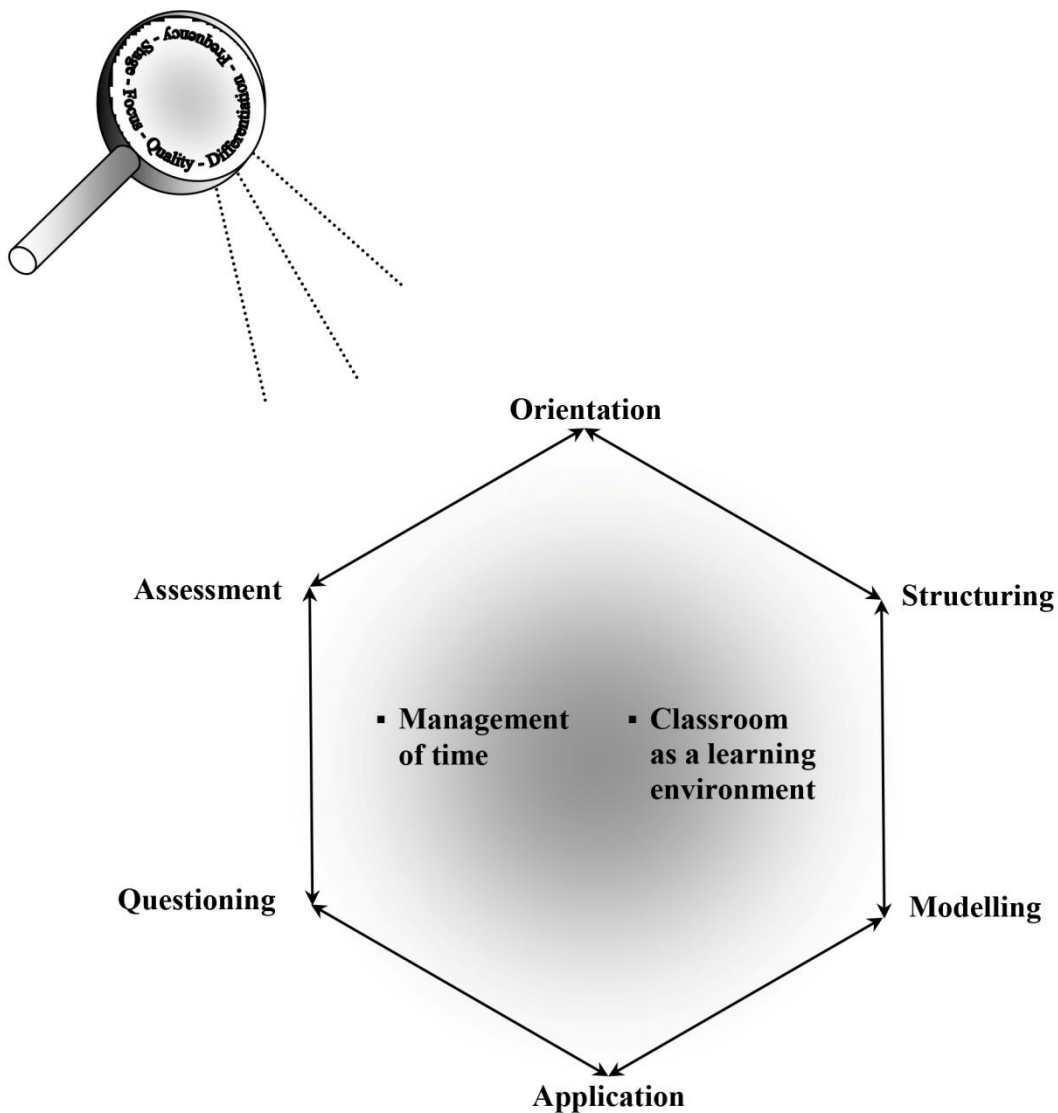


Figure 2.3: Factors of the dynamic model operating at the classroom level

Teacher factors refer to observable instructional behaviour of teachers in the classroom rather than on factors that may explain such behaviours (e.g., teacher beliefs and knowledge and interpersonal competences). The eight factors included in the model are as follows: *orientation, structuring, questioning, teaching-modelling, applications, time management, teacher role in making classroom a learning environment, and classroom assessment*. These eight factors, which are briefly described in Table 2.1., were found to be associated with student outcomes (e.g., Brophy & Good, 1986; Darling-Hammond, 2000; Muijs & Reynolds, 2000; Rosenshine & Stevens, 1986; Scheerens & Bosker, 1997). They do not, however, refer to only one approach of teaching such as structured or direct teaching (Joyce, Weil, & Calhoun, 2000) or to approaches associated with constructivism (Schoenfeld, 1998). An integrated approach in defining quality of teaching is adopted (Elboj & Niemela, 2010). Specifically, the dynamic model does not only refer to skills associated with direct teaching and mastery learning such as structuring and questioning, but also to orientation and teaching modelling which are in line with theories of teaching associated with constructivism. These two factors also are in-keeping with the principles of teaching for understanding. Moreover, they promote the achievement of the new goals of education such as the development of metacognitive skills. Furthermore, the collaboration technique (Slavin, 1983; Slavin & Cooper, 1999) is included under the overarching factor contribution of teacher to the establishment of classroom learning environment (see Table 2.1). Studies investigating differential teacher effectiveness revealed that the previously listed eight factors may have a stronger impact on the learning of specific groups of students, but can be treated as generic in nature as research highlights a link with the achievement of each group of students (Campbell et al., 2004).

Studies testing the validity of the model also revealed that these factors are interrelated and can be grouped into five types of teacher behaviour. These are discerned in a distinctive way and move gradually from skills associated with direct teaching to more advanced skills concerned with new teaching approaches, and differentiation of teaching (Kyriakides, Creemers, & Antoniou, 2009). Teachers exercising more advanced types of behaviour have better student outcomes. This result is taken into account for developing teacher professional improvement programmes. Early findings of studies evaluating these programmes provide support for the development of a dynamic integrated approach to teacher professional development (Creemers & Kyriakides, 2012).

The dynamic model is based on the assumption that although there are eight teacher factors, each factor can be defined and measured using the five dimensions: *frequency, focus, stage, quality, and differentiation*. These dimensions are supposed to contribute to the effects that a factor is expected to have on student outcome measures. They also help to describe the functioning of a factor more effectively. The importance of taking each dimension of teacher effectiveness factors into account is illustrated below by explaining how one of the factors included in the model (*orientation*) is defined.

Table 2.1. The main elements of each teacher factor included in the dynamic model

Factors	Main elements
1) Orientation	a) Providing the objectives for which a specific task/lesson/series of lessons take(s) place; and b) challenging students to identify the reason why an activity is taking place in the lesson.
2) Structuring	a) Beginning with overviews and/or review of objectives; b) outlining the content to be covered and signalling transitions between lesson parts; and c) drawing attention to and reviewing main ideas.
3) Questioning	a) Raising different types of questions (i.e., process and product) at appropriate difficulty level; b) giving time for students to respond; and c) dealing with student responses.
4) Teaching modelling	a) Encouraging students to use problem solving strategies presented by the teacher or other classmates; b) inviting students to develop strategies; and c) promoting the idea of modelling.
5) Application	a) Using seatwork or small group tasks in order to provide needed practice and application opportunities; and b) using application tasks as starting points for the next step of teaching and learning.
6) The classroom as a learning environment	a) Establishing on task behaviour through the interactions they promote (i.e., teacher-student and student-student interactions); and b) Dealing with classroom disorder and student competition through establishing rules, persuading students to respect them and using the rules.
7) Management of time	a) Organising the classroom environment; and b) Maximising engagement rates.
8) Assessment	a) Using appropriate techniques to collect data on student knowledge and skills; b) analysing data in order to identify student needs and report the results to students and parent; and c) evaluating their own practices.

Orientation refers to teacher behaviour in providing the objectives for a specific task, lesson or series of lessons. It also encompasses challenging students to identify the reason for which an activity takes place within the lesson. The engagement of students with orientation tasks may encourage them to actively participate in the classroom as the tasks that take place are meaningful for them (De Corte, 2000; Paris & Paris, 2001). As a consequence, the *frequency* dimension is measured by taking into account the number of orientation tasks that take place in a typical lesson as well as how long each orientation task takes place. These two indicators help us identify the importance that the teacher attaches to this factor.

The effectiveness factors are also measured by taking into account the *focus* of the activities which are associated with each factor. Two aspects of focus for each factor are measured. First, it is taken into account that each task associated with the functioning of an effectiveness factor may not take place by chance but for a reason. Thus, according to the dynamic model, the first aspect of the focus dimension of each factor addresses *the purpose(s)* for which an activity takes place. It is taken into account that an activity may be expected to achieve single or multiple purposes. In the case of orientation, this aspect of focus is measured by examining the extent to which an activity is restricted to finding one single reason for doing a task or finding the multiple reasons for doing a task. The second aspect of this dimension refers to *the specificity* of the activities. These can range from specific to general. The specificity of the orientation tasks is measured taking into account that an orientation task may refer to a part of a lesson or to the whole lesson or even to a series of lessons (e.g., a lesson unit). Effective teachers encourage students to be engaged in different types of orientations tasks (Kyriakides & Creemers, 2008).

Activities associated with a factor can be measured by taking into account the *stage* at which they take place. In the case of orientation, it is taken into account that orientation tasks may take place in different parts of a lesson or series of lessons (e.g., introduction, core, ending of the lesson). Effective teachers are expected to offer orientation tasks at different parts of lessons (Killen, 2007). Further, it is expected that effective teachers are able to take others' perspectives into account during this orientation phase. For example, students may come with suggestions for the reasons of doing a specific task. An effective teacher is expected to take this into account (Gijbels, Van de Watering, Dochy, & Van den Bossche, 2006).

The *quality* dimension refers to the properties of the specific factor itself, as these are discussed in the literature. This implies that the quality dimension deals with the process of teaching and is not concerned with the effects of teaching in terms of student outcomes. It is assumed that this dimension, in combination with others, may help us explain variation in student outcomes and for this reason it is included in the model. The importance of using this dimension also arises from the fact that looking at the quantity elements of a factor ignores the fact that the functioning of the factor may vary. The quality dimension measures the properties of the orientation task, and specifically whether it is clear for the students. It also refers to the impact that the task has on student engagement in the

learning process. For example, teachers may present the reasons of doing a task simply because they have to do it, and it is part of their teaching routine without having much effect on student participation. On the other hand, others may encourage students to identify the purposes that can be achieved by doing a task. Therefore, this increases their motivation towards a specific task / lesson /series of lessons.

Finally, *differentiation* is measured by looking at the extent to which teachers provide different types of orientation tasks to students according to their learning needs and especially by taking into account differences in the personal and background characteristics of students. Using different orientation tasks is expected to help all students to find out the reasons for which specific tasks take place in their classroom. Moreover, taking into account the different types of objectives that are supposed to be covered during the instruction, teachers are also expected to use different orientation tasks in order to introduce students to the importance of different objectives that have to be acquired. Finally, teachers may differentiate the orientation tasks in relation to the organisational and cultural context of their school or classroom in order to facilitate their understanding of the purposes of learning tasks (Kyriakides, 2007).

C) School factors

The definition of the school level is based on the assumption that factors at the school level are expected to have both direct effects and indirect effects on student achievement. School factors are expected to influence classroom-level factors, particularly teaching practice. This assumption is based on the fact that EER has shown that the classroom level is more significant than the school level (e.g., Kyriakides et al., 2000; Teddlie & Reynolds, 2000). Moreover, defining factors at the classroom level is seen as a pre-requisite for defining the school level (Creemers, 1994). Therefore, the dynamic model refers to factors at the school level which are related to the same key concepts of quantity of teaching, provision of learning opportunities, and quality of teaching which are used to define the classroom level factors of the dynamic model. Meta-analyses have shown that they are related with student achievement (Kyriakides et al., 2010; Scheerens, Seidel, Witziers, Hendriks, & Doornekamp, 2005; Witziers, Bosker, & Kruger, 2003). Specifically, emphasis is given to the following two main aspects of the school policy which affect learning at both the teacher and student level: a) school policy for teaching, and b) school policy for creating a learning environment at school.

Guidelines are seen as one of the main indications of school policy. This is reflected in the way each school level factor is defined (see Creemers & Kyriakides, 2008). In using the term guidelines, the dynamic model refers to a range of documents. These include: staff meeting minutes, announcements, and action plans. These make the policy of the school more concrete to the teachers and other stakeholders. However, this factor does not imply that each school should simply develop formal documents to install policy. The factors concerned with the school policy mainly refer to the

actions taken by the school to help teachers and other stakeholders have a clear understanding of what is expected from them to do. Support offered to teachers and other stakeholders to implement the school policy is also an aspect of these two factors (Creemers & Kyriakides, 2010b).

Based on the assumption that the essence of a successful organisation in the modern world is the search for improvement (Hopkins, 2001), the processes and the activities which take place in the school in order to improve the teaching practice and the School Learning Environment (SLE) are also examined. For this reason, the processes which are used to evaluate the school policy for teaching and the SLE are investigated. Thus, the following four factors at the school level are included in the model (see Figure 2.4):

- a) *School policy for teaching and actions taken for improving teaching practice*
- b) *Policy for creating the SLE and actions taken for improving the SLE*
- c) *Evaluation of school policy for teaching and of actions taken to improve teaching*
- d) *Evaluation of the SLE*

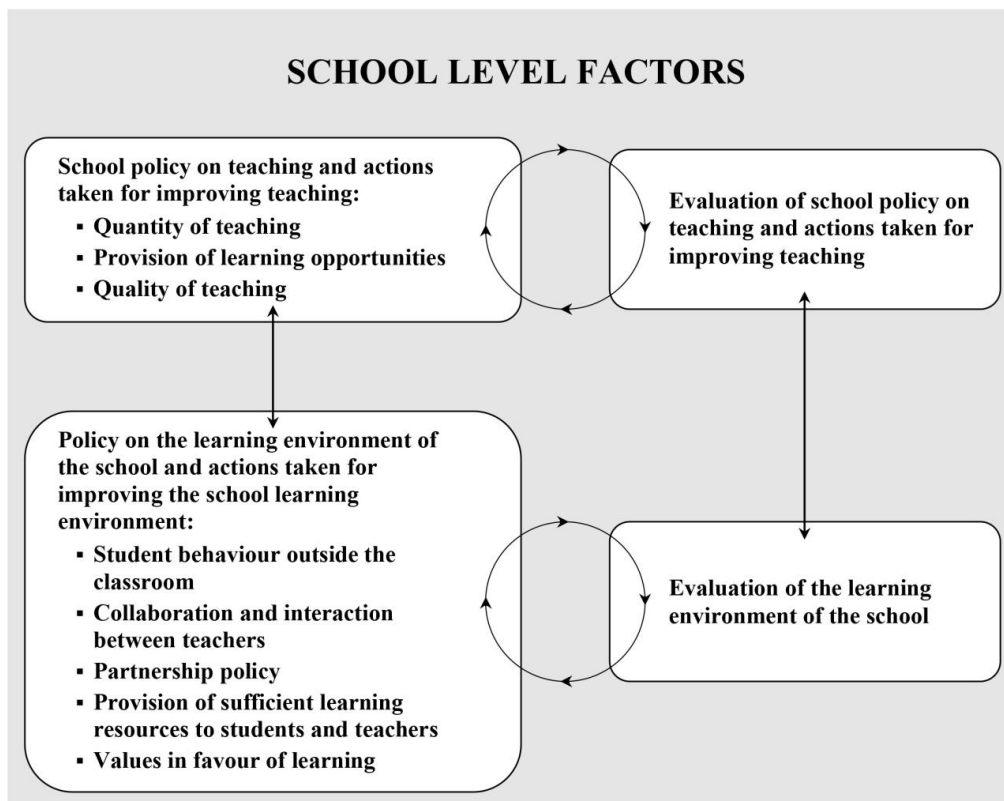


Figure 2.4: Factors of the dynamic model operating at the school level

School policy for teaching and actions taken for improving teaching

The definition of the dynamic model at the classroom level refers to factors related to the key concepts of *quality*, *time on task*, and *opportunity to learn*. Therefore, the model attempts to investigate aspects of school policy for teaching associated with the quantity of teaching, provision of learning opportunities, and quality of teaching. Actions taken for improving the above three aspects of teaching practice, such as the provision of support to teachers in improving their teaching skills, are also taken into account. Specifically, the following aspects of school policy on quantity of teaching are taken into account:

- School policy on the management of teaching time (e.g., lessons start on time and finish on time; there are no interruptions of lessons for staff meetings and/or for preparation of school festivals and other events)
- Policy on student and teacher absenteeism
- Policy on homework
- Policy on lesson schedule and timetable

School policy on provision of learning opportunities is measured by looking at the extent to which the school has a mission concerning the provision of learning opportunities. This is also reflected in the school policy on curriculum. School policy on long-term and short-term planning and school policy on providing support to students with special needs is also examined. Furthermore, the extent to which the school attempts to make good use of school trips and other extra-curricular activities for teaching/learning purposes is investigated. Finally, school policy on the quality of teaching is seen as closely related to the teacher factors of the dynamic model.

Therefore, the way school policy for teaching is examined reveals that effective schools are expected to take decisions on maximising the use of teaching time and the learning opportunities offered to their students (Anderson, 1995). In addition, effective schools are expected to support their teachers in their attempt to help students learn by using effective teaching practices (Heck & Moriyama, 2010; Hallinger & Heck, 2011). In this context, the definition of this factor implies that schools should:

- a) Make sure that teaching time is offered to students.
- b) Offer to students learning opportunities beyond those offered by the official curricula.
- c) Attempt to improve the quality of teaching practice.

School policy for creating the SLE and actions taken for improving the SLE

School climate factors have been incorporated in effectiveness models in different ways. Stringfield (1994) defines the school climate very broadly as the total environment of the school. This makes it difficult to study specific factors of the school climate and examine their impact on student

achievement. The dynamic model refers to the extent to which a learning environment has been created in the school. This element of school climate is seen as the most important predictor of school effectiveness, as learning is the key function of a school (Linnakyla, Malin, & Taube, 2004). Moreover, EER has shown that effective schools are able to respond to the learning needs of both teachers and students. Furthermore, research indicates that effective schools are involved in systematic changes of the internal processes in order to achieve educational goals more effectively in conditions of uncertainty (Teddlie & Stringfield, 1993; Creemers & Kyriakides, 2010a). In this context, the following five aspects which define the SLE are taken into account:

- a) Student behaviour outside the classroom
- b) Collaboration and interaction between teachers
- c) Partnership policy (i.e., relations of school with community, parents, and advisors)
- d) Provision of sufficient learning resources to students and teachers
- e) Values in favour of learning

The first three aspects refer to the rules which the school has developed for establishing a learning environment inside and outside the classrooms. Here the term learning does not refer exclusively to student learning. For example, collaboration and interaction between teachers may contribute in their professional development (i.e., learning of teachers) but may also have an effect on teaching practice and thereby may also improve student learning. The fourth aspect refers to the policy on providing resources for learning. The availability of learning resources in schools may not only have an effect on student learning, but may also encourage the learning of teachers. For example, the availability of computers and software for teaching Geometry may contribute to teacher professional development as it encourages teachers to find ways to make good use of the software in their teaching practice. Thereby the teacher becomes more effective. The last aspect of this factor is concerned with the strategies which the school has developed in order to encourage teachers and students to develop positive attitudes towards learning.

Following a similar approach as the one concerned with school policy on teaching, the dynamic model attempts to measure the school policy for creating a SLE. Actions taken for improving the SLE beyond the establishment of policy guidelines are also taken into account. Specifically, actions taken for improving the SLE can be directed at:

- a) Changing the rules in relation to the first three aspects of the above SLE factor
- b) Providing educational resources (e.g., teaching aids and educational assistance)
- c) Helping students/teachers develop positive attitudes towards learning

For example, a school may have a policy for promoting teacher professional development. However, this might not be enough- especially if some teachers do not consider professional development as an important issue. In this case, actions should be taken to help teachers develop positive attitudes towards learning, which may help them become more effective.

School evaluation

The last two overarching school factors of the dynamic model refer to the mechanisms used to evaluate the functioning of the first two overarching factors. Creemers (1994) claims that control is one of the major principles which operates in generating educational effectiveness. This implies that goal attainment and the school climate should be evaluated. In addition, studies investigating the validity of the model provided empirical support for the importance of this principle (e.g., de Jong et al., 2004; Kyriakides et al., 2000; Kyriakides, 2005a). It was thus decided to treat evaluation of policy for teaching and other actions taken to improve teaching practice, and evaluation of the SLE as two overarching factors operating at the school level. The ways the five proposed dimensions are used to measure these two factors are described below. The following section aims to clarify how the five dimensions of the dynamic model are used to measure each school factor.

Frequency: First, frequency is measured by investigating how many times during the school year the school collects evaluation data concerning its own policy for teaching or its own policy for the SLE. Emphasis is also given to the sources of evaluation data. This is attributed to the fact that studies on school evaluation reveal that evaluators should employ a multi-dimensional approach in collecting data on school and teacher effectiveness (e.g., Beerens, 2000; Danielson & McGreal, 2000; Johnson, 1997; Kyriakides & Campbell, 2004; Nevo, 1995). These comparisons of various sources might increase the internal validity of the evaluation system (Campbell & Fiske, 1959; Cronbach, 1990).

Focus: The focus dimension refers to the aspects of the school policy for teaching or the aspects of the school policy of SLE which are evaluated. More specifically, evaluation of school policy may attempt to measure the properties of the school policy (e.g., clear, concrete, in line with the literature), its relevance to the problems which teachers and students have to face, and its impact on school practice and student outcomes. It also is examined whether each school evaluates not only the content of the policy for teaching and the actions taken to improve teaching practice but also the abilities of people who are expected to implement the policy. Moreover, the focus dimension is measured by looking at the extent to which information gathered from the evaluation is too specific (e.g., teacher X cannot do this) or too general (e.g., teachers are not able to teach effectively). Research on school self-evaluation reveals that data collected should not be too specific or place blame on any individual (e.g., Fitz-Gibbon, 1996; Hopkins, 2001; Patton, 1991; Visscher & Coe, 2002) because such an approach serves the summative purpose of evaluation and does not help the schools to take decisions on how to improve their policy. At the same time, information gathered from evaluation should not be too general but should be focused on how to influence decision-making. In particular, the process of allocating responsibilities to school partners in order to introduce a plan for improving the effectiveness of their school is essential (Kyriakides & Campbell, 2004; MacBeath, 1999; Meuret & Morlaix, 2003).

Stage: The stage dimension of this factor is examined by looking at the period in which evaluation data are collected. Schools could either conduct evaluation at the end of certain periods (e.g., end of semester) or establish evaluation mechanisms which operate on a continuous basis during the whole school year. Schools are also expected to review their own evaluation mechanisms and adapt them in order to collect appropriate and useful data (see also Cousins & Earl, 1992; Torres & Preskill, 2001; Preskill, Zuckerman, & Matthews 2003; Thomas, 2001).

Quality: Quality is measured by looking at the psychometric properties (i.e., reliability, validity and use) of the instruments used to collect data. It also is expected that evaluation data will be used for formative rather than summative reasons, as school evaluation is seen as closely related to the school improvement process (Kyriakides, 2005b; Hopkins, 1989).

Differentiation: Finally, the differentiation dimension is measured by looking at the extent to which the school places a greater emphasis on conducting evaluation for specific aspects/reasons of the policy for teaching. This is especially relevant to those aspects which refer to the major weaknesses of the school. For example, if policy on homework is considered problematic the school may decide to collect data for homework more often and in greater depth instead of collecting data for any other aspect of school policy for teaching.

D) System factors

The dynamic model does not refer to all of the characteristics of an educational system which reveal variations in the operation of the educational systems around the world. For example, the dynamic model does not refer to the structure of the system but to aspects of the national policy that affect learning inside and outside the classroom. This assumption is based on international studies and meta-analyses of comparative studies which suggest that the effectiveness of an educational system cannot be attributed to whether it is a centralised or a decentralised system (see Fullan, 2001; Kyriakides & Charalambous, 2005; Schmidt, Jakwerth, & McKnight, 1998; Schmidt & Valverde, 1995). Thus, the definition of the system level is based on the assumption that factors at the system level are expected to have not only direct effects on student achievement but also mainly indirect effects. System factors are expected to influence the school and/or classroom level factors, especially the teaching practice and the SLE (see Figure 2.5).

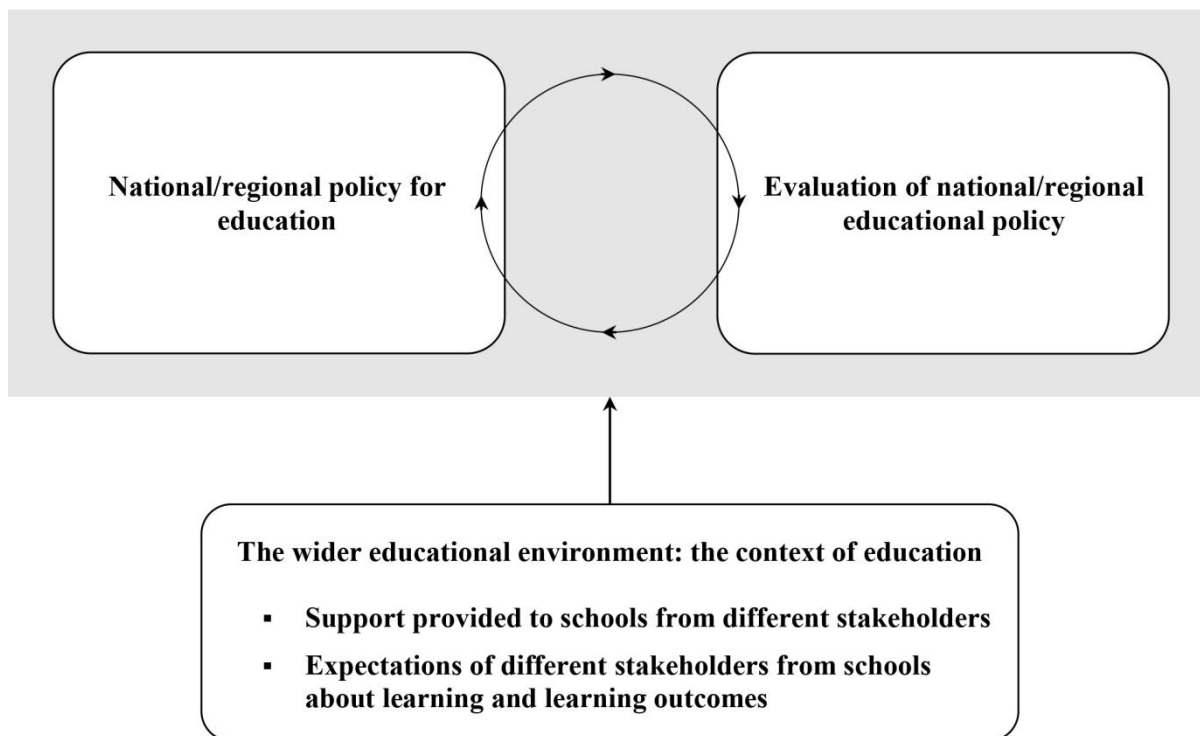
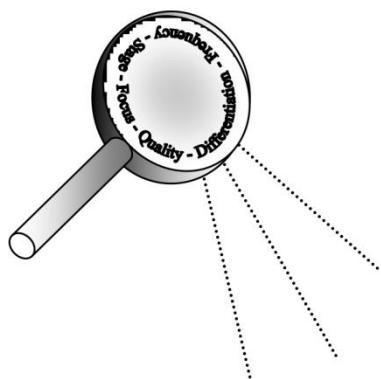


Figure 2.5: Factors of the dynamic model operating at the context level

Thus, the first overarching system level factor refers to the national educational policy on teaching practice and the SLE. Policy is expected to not only directly affect teaching practice and the SLE but also indirectly, through encouragement of schools to develop their own policies. As in the case of the school level, actions taken for improving national policy in relation to the teaching and the learning environment of the schools are also taken into account. Moreover, the term policy guidelines is used in a more broad way to indicate a variety of documents sent to schools by the context/system level. These documents highlight the meaning of the national/regional policy and what teachers and other stakeholders are expected to do.

The evaluation mechanism of the national educational policy may also contribute to the improvement of the national policy (Mintrop & Trujillo, 2007; Yeh, 2009). Therefore, through this, it may also contribute to the improvement of educational effectiveness. Thus, the evaluation of national policy is also treated as an overarching factor operating at the system level. However, an essential

difference to factors operating at the school level is the consideration of the wider environment of education. Specifically, the wider educational environment of a country or a region and its ability to increase opportunities for learning and develop positive values for learning is considered as an important context/system level factor. This is due to the fact that it is acknowledged that student learning is not expected to only take place in schools but also in the wider school community. Thus, the dynamic model refers to the most important factors operating at the system level that may affect achievement. Emphasis is given to the:

- a) *National policy and the actions taken to improve the quality of teaching and the School Learning Environment (SLE)*
- b) *Evaluation of the national educational policy*
- c) *Wider educational environment of a country and especially its ability to increase opportunities for learning and develop positive values for learning*

National policy for education with consequences for actions taken for improving teaching and the learning environment of the school

The first overarching context level factor refers to the national education policy in relation to teaching and aspects associated with the learning environment of the school. As far as the national policy on teaching is concerned, the factor refers to the same three aspects which are included in the relevant school-level factors (i.e., quantity of teaching, provision of learning opportunities, and quality of teaching).

In the case of the *quantity* of teaching, national policy / regulations concerned with the timetable of the school, the long-term and short-term planning, and the policy on absenteeism and drop-out levels are considered. In an effective educational system, these regulations will ensure that the quantity of teaching is kept to a maximum level, or even provide support to the schools to keep it to a maximum level (Levin, 2010). As far as the *quality* of teaching is concerned, educational systems may develop standards for teaching to ensure that teaching practice is in line with each of the eight classroom-level factors (van der Schaaf & Stokking, 2011). Alternatively, educational systems may build teacher evaluation policy in such a way that the criteria for teacher evaluation refer to the quality of teaching in relation to the eight classroom-level factors of the dynamic model.

Finally, national policy on provision of learning opportunities is associated with the policy on the national curriculum. This aspect of the first overarching factor is also concerned with policy-makers' attempts to support /encourage students, teachers and schools to undertake extracurricular activities which contribute to the achievement of the aims of the curriculum. For example, encouraging students and schools to participate in competitions; or encouraging participation in action research projects attempting to help students achieve curricular aims.

As mentioned above, the second aspect of this factor is concerned with the national education policy and its consequences for improving the learning environment of the schools. It also considers

actions taken by the policy makers for improving the learning environment of the schools. Specifically, the second aspect of this factor may refer to the provision of guidelines/rules and the establishment of strategies that may:

- a) Support collaboration of teachers within a school (e.g., by giving teachers free time to use for coordination).
- b) Help schools establish networks to support each other.
- a) Encourage schools to use specific partnership types in order to improve their effectiveness.
- b) Provide suggestions on how schools can treat student misbehaviour outside and inside the classroom (e.g., how to deal with bullying).

The educational system is also expected to provide resources to schools for improving their learning environment (Spencer, Noll, & Cassidy, 2000). These could refer to the financial support that is provided to schools and/or to other types of support associated to learning such as the provision of:

- a) In-service training to the school staff which is not only expected to help teachers improve their teaching practice but may also refer to strategies that can be used to improve the SLE.
- b) School advisory systems which may provide support to schools in improving teaching practice and their SLE.
- c) Textbooks, teaching aids, and other learning resources.

Evaluation of national educational policy

The second overarching system/ context level factor is concerned with the evaluation mechanisms that each educational system may establish in order to collect data about the appropriateness of its national policy. Evaluation data of other actions taken by policy-makers for improving teaching and the SLE could also be collected. The measurement of this factor is done in a way very similar to the two relevant school level factors concerning the evaluation of the school policy.

The wider educational environment: The context of education

The wider educational environment of a country and its ability to increase opportunities and develop positive values for learning is considered as an important system level factor (Bamburg, 1994; Lee & Smith, 1999). The dynamic model concentrates on two aspects of the wider educational environment which are expected to influence learning. First, the support provided to schools from different stakeholders (e.g., church, companies, universities, educational researchers, institutions responsible for providing support/advice/in-service training to schools) is examined. However, we are not only concerned with the financial support which different stakeholders provide to schools (Hanushek, 1986). Support provided to schools may also refer to strategies/advice offered to schools which may help them improve their teaching practice or establish better learning environments (e.g., help them establish better relations among teachers and/or between teachers and students; help them identify

ways to treat student misbehaviour outside and inside the classroom; support their attempts to undertake extracurricular activities that are related to the official aims of the curriculum).

The second aspect of this overarching factor refers to the expectations of different stakeholders (e.g., employers, policy-makers, parents, and public) from schools about learning and learning outcomes. These expectations may result in achievement press and, through that, in student achievement gains (Valverde & Schmidt, 2000). The importance of the second aspect of this overarching factor is justified by the results of a secondary analysis of PISA 2000 data (from 32 countries, 4,159 schools, and 97,384 students). This analysis revealed that the PISA index of “achievement press” aggregated at the country level is associated with student achievement (Kyriakides & Demetriou, 2006). This implies that the schools of most effective countries are driven by a quest for academic excellence. Although further empirical evidence to support the generalisability of this finding is needed, the fact that this factor, and not any other contextual factor measured by the PISA study (e.g., the average SES of students), was found to be associated with student achievement should be emphasised.

Empirical Evidence Supporting the Dynamic Model

Some supportive material for the validity of the dynamic model at the classroom and school level has been provided. Specifically, five studies and two meta-analyses provided support to the main assumptions of the dynamic model. These studies and the meta-analyses are briefly presented below. Readers can find more information on the methodology and the findings of these studies in the respective publications mentioned in this section.

A) Longitudinal studies testing the dynamic model

First, a longitudinal study measuring teacher and school effectiveness in three different subjects (i.e., mathematics, Greek language, and religious education) was conducted in order to test the main assumptions of the model (Kyriakides & Creemers, 2008). Using Structural Equation Modelling (SEM) techniques, it was possible to demonstrate that classroom and school factors can be defined by reference to the five dimensions of the dynamic model (see Kyriakides & Creemers, 2008; Creemers & Kyriakides, 2010b). The added value of using these five dimensions of the classroom and school level factors to explain variation in student achievement in both cognitive and affective outcomes of schooling was also demonstrated. Moreover, some factors were found to have no statistically significant effect on student achievement by measuring the impact of their frequency dimension, but had a significant impact on student achievement when other dimensions were taken into account. Finally, it was possible to generate evidence supporting the assumption that the impact of school factors depends on the current situation of the school and on the type of problems/difficulties that the school is facing. Specifically, school factors were found to have situational effects. The development

of a school policy for teaching and the evaluation of school policy for teaching were found to have stronger effects in schools where the quality of teaching at classroom level was low (Creemers & Kyriakides, 2009).

Second, a study investigating the impact of teacher factors on achievement of Cypriot students at the end of pre-primary school was conducted (Kyriakides & Creemers, 2009). By comparing the results of this study with the findings of the first study testing the validity of the model, similarities and differences in effective teaching of two different subjects (mathematics and Greek language) and at two different phases of schooling (pre-primary and primary education) were identified. This comparison revealed that almost all teacher factors were associated with achievement in language and mathematics at both phases of schooling (see Kyriakides & Creemers, 2009). Some factors were also found to be more important for one age of schooling than the other. This indicates the possibility of different factors having differential effects. For the purpose of testing the generic nature of the model, this difference does not question the importance of teacher factors within the model. These differences in effect sizes might be attributed to differences in the developmental stages of the two groups of students and be related to the functioning and the curriculum of each phase of schooling. Therefore, the assumption that the factors included in the dynamic model are generic was mainly supported.

Third, a follow-up study testing the validity of the dynamic model was conducted during the school year 2008-2009 (Creemers & Kyriakides, 2010a). The methods used were identical to those followed by the original study testing the validity of the model. This study provided support to the generalisability of the original study. Very similar results on the impact of teacher and school factors upon student achievement emerged from both the original and the follow-up study. Since the follow-up study took place in the same schools where the original study took place, changes in the effectiveness status of schools and in the functioning of effectiveness factors were also identified. Discriminant function analysis reveals that changes in the functioning of some school factors and in the quality of teaching practice can help classify the schools into those which managed to improve their effectiveness status and those that remained equally effective or even reduced their effectiveness status (see Creemers & Kyriakides, 2010a). Thus, this study was able to test one of the essential differences of the dynamic model. This is an attempt to relate changes in the effectiveness status of schools to the changes in the functioning of school factors.

Fourth, a longitudinal study was conducted to explore whether the dynamic model could be expanded at the school level by introducing the concept of school policy in action (Kyriakides & Demetriou, 2010). In this way, not only the policy at the school level is examined but also the actions of teachers in regard to their school policy are taken into account. This study revealed the need to investigate not only the content of the school policy but also the extent to which the stakeholders of a school act in accordance with the guidelines of the school policy. Cluster analysis revealed that there were schools which managed to develop appropriate policy on teaching and their SLE but their

teachers did not implement their school policy. There were also two cluster groups which had completely opposite results meaning that they did not develop any policy on teaching and SLE but their teachers took initiatives and actions in order to improve their teaching practice and their SLE. However, neither of the two cluster groups consisted of schools which can be considered as among the most effective schools. On the other hand, almost all schools which managed to get high scores both in the policy and in the action scales were among the most effective schools. These results provide support for the importance of investigating the *school policy in action* factor rather than looking at either the school policy only or the actions that teachers take. In addition, it was demonstrated that the school policy in action factor has a larger effect size on student achievement than the school policy factor.

Fifth, a comparative study was conducted investigating the importance of grouping teacher factors into stages of teaching (Janosz, Archambault, & Kyriakides, 2011). Seven primary schools in the suburb area of Montreal (Canada) participated in the study and its results were compared with the ones of the previously mentioned studies. The study in Canada provided further support to the assumption of the dynamic model that teacher level factors are interrelated and should not be treated as isolated. Moreover, it was demonstrated that the use of specific ways to describe not only quantitative but also qualitative characteristics of these factors helps us classify teaching skills into types of teacher behaviour. The four types of behaviour emerged from this study are similar to the five levels identified by the study conducted in Cyprus. However, skills associated with the differentiation of teaching were not found to belong to a separate level. It is finally important to note that this study can be seen as a step towards the development of a comparative research programme searching for stages of teaching skills by using the dynamic model as a theoretical framework.

B) Meta-analyses testing the validity of the dynamic model

Two quantitative syntheses of effectiveness studies were conducted in order to test the importance of teacher and school factors respectively. First, the validity of the dynamic model at the school level was supported by the results of a quantitative synthesis of 67 studies exploring the impact of school factors on student achievement (Kyriakides, Creemers, Antoniou, & Demetriou, 2010). This meta-analysis revealed that effective schools are able to develop policies and take actions in order to improve their teaching practice and their learning environment. Moreover, factors excluded from the dynamic model were found to be weakly associated with student achievement.

The second meta-analysis was concerned with the impact of teacher factors on student achievement. Thus, the dynamic model of educational effectiveness was used as a framework to search for studies investigating the impact of teacher factors on different student learning outcomes which were conducted during the last 30 years. The results of the quantitative synthesis of 88 studies which were identified revealed that all teacher factors of the dynamic model are associated with

student achievement. Factors excluded from the dynamic model are weakly associated with learning outcomes but some support to two factors associated with constructivism (i.e., self-regulation and concept mapping) was also provided (Kyriakides & Christoforou, 2011). This approach of conducting meta-analysis helps us interpret the findings by providing support to the validity of the dynamic model and suggestions for its further development.

C) The main results of the European Research Project (ERP) on promoting quality in education

The main aim of the ERP was to investigate and explain differences between European countries and between schools within countries in the average and differential added value of primary education for different outcomes of schooling (see also Chapter 1). For the theoretical framework of the project the dynamic model of educational effectiveness was used. By collecting data on student, teacher, school and system factors included in the dynamic model, we developed and tested the validity of the model, particularly in relation to the diversity of student intake, processes, and prospective outcomes.

The across country analyses of the ERP revealed several key findings. First, teacher and school factors can be considered generic in nature, since they can explain variation in student achievement gains in Mathematics and Science. Regarding teacher factors, the model refers to factors that describe teachers' instructional role. These factors do not refer only to one teaching approach such as the direct teaching model or the constructivist approach; they form an integrated approach in keeping with modern theories of teaching. They define quality of teaching both in terms of teacher-guided instruction models and also more student-guided teaching and learning models. The results of the ERP show the close relationships between factors associated with different teaching approaches, indicating that multiple approaches to teaching should be promoted in order to improve learning outcomes. In regard to school-level factors, the dynamic model is based on the assumption that school factors are expected to influence classroom factors, especially teaching practice. Therefore, the model includes the same concepts of quantity of teaching, provision of learning opportunities, and quality of teaching for both school- and classroom-level factors. The results of the ERP show the importance of these factors, provide support for the assumptions of the dynamic model, and reveal relations among factors operating at different levels.

More specifically, analysis of data provides some support for aspects of the model and supports the main assumptions of the proposed dynamic theory of educational effectiveness. It also shows that some of the included factors are associated with student achievement in mathematics and science. The project draws attention to the importance of maximizing the use of teaching time since in the across country analysis this factor was found to explain differences in learning outcomes. In addition, the factor concerned with quality of teaching which refers to structured teaching and active participation of students in learning was also found to be important for student learning outcomes. Although there is variation in the performance of teachers from country to country, the mean scores

of teacher factors in each country were relatively low which implies that there is a lot of space for improving the teaching skills of teachers in each country.

In addition, the project shows the importance of factors operating at the school level which are concerned not only with the development of the school policy but also with the actions taken to improve the school learning environment. In this project, it was found that the following aspects of the school learning environment need to be considered in promoting quality in education: a) teacher collaboration, b) partnership policy (relations with parents and the school community), and c) effective use of resources. Furthermore, school evaluation of the policy for teaching and the policy for the school learning environment was found to explain variation in student achievement. Specifically, the formative role of evaluation is stressed, especially since evaluation data can help schools identify priorities of improvement. This project also shows that the performance of most schools in each of these factors was smaller than the midpoint of the scale. This reveals an urgent need for supporting schools to improve not only their teaching practice but also their policy for teaching and their learning environment.

Second, the ERP elaborated on the system-level factors of the dynamic model and measured their functioning in each of the six participating countries. By investigating the relationships of system-level factors with educational outcomes and with school and teacher factors, the study has introduced the concept of ‘policy in action’ that aids understanding how factors associated with national and school policy may influence the actions of education stakeholders and, consequently, contribute to improvements in the school learning environment and teaching practice. By studying policy in action, the project provides suggestions to national and European policy makers about effective practices at system (country), school and classroom level to contribute to improvement of educational quality.

An original and significant contribution of the ERP to knowledge is that it shows the associations between the factors of the dynamic model and student achievement gains. This implies that the development of reform policies (both at national and school level) to improve education quality can be achieved by helping schools and teachers improve the functioning of these factors. Thus, a theory-driven and evidence-based approach to policy-making is promoted. This approach is described in the next chapter. Other significant achievements of the ERP include the development of valid instruments that can be used by researchers, policy-makers and school stakeholders to measure the functioning of teacher, school and system level factors in different countries (see Chapter 4). The individual country projects that contributed to the ERP, particularly those conducted in Slovenia and Cyprus, revealed the added value of using a theory-driven and evidence-based approach for school improvement purposes. The experimental groups of teachers and schools that used the dynamic model improved their classroom and school learning environment and their effectiveness status by helping their students to achieve better results. These projects developed a dynamic approach to school improvement (Creemers & Kyriakides, 2012) that is relevant to researchers, practitioners, and policy-makers working to promote quality of education.

Conclusions

The findings of the national studies, the two meta-analyses and of the European study are summarized in Table 2.2. This table shows that empirical support to the main assumptions of the model has been provided. In addition, the importance of teacher and school factors is demonstrated through both empirical studies and meta-analyses. It is also important to note that none of these studies show that any factor or its dimension is negatively associated with student achievement in any outcome. Although further research is needed to test the generalisability of these findings and investigate in more detail some assumptions of the model, the evidence that are available can be used to establish a school improvement approach aiming to promote quality in education. As a consequence, the ERP advocates the use of an evidence-based and theory-driven approach to improve quality in education and draws implications for the development of national policy on supporting schools to improve their learning environment and the quality of the teaching practice. This approach is described in the next chapter. In this chapter, the theoretical background of the proposed dynamic approach to school improvement is presented. Specifically, the factors included in the dynamic model were described and school stakeholders can see how these factors are measured and why they are related with student achievement. These bring us into to question whether the dynamic approach can also be used for improvement purposes. Thus, in the next chapter, we show which strategies for school improvement are promoted by the dynamic model and how the model can be used for improvement purposes.

Table 2.2: Empirical evidence supporting the main assumptions of the dynamic model emerged from empirical studies and met-analyses.

Assumptions of the dynamic model	Studies	Meta-analyses
1. Multilevel in nature	All	All
2. Five dimensions can be used to measure		
a) teacher factors	1, 2, 4, 5	
b) school factors	1, 3, 4	I
3. Impact of teacher factors on learning outcomes	1, 2, 4, 5, 6	2
4. Impact of school factors on learning outcomes	1, 3, 4, 6	1
5. Situational character of school factors	1	
6. Relations among factors operating at the same level: stages of effective teaching	1, 2, 5, 6	2
7. Changes in the functioning of school factors predict changes in the effectiveness status of schools	3	
<i>Negative results in relation to any assumption</i>	None	None

Studies:

- 1) A longitudinal study measuring teacher and school effectiveness in different subjects (Creemers & Kyriakides, 2009, 2010a; Kyriakides & Creemers, 2008; Kyriakides, Creemers & Antoniou, 2009).
- 2) A study investigating the impact of teacher factors on achievement of Cypriot students at the end of pre-primary school (Kyriakides & Creemers, 2009).
- 3) A follow-up study testing the validity of the model at the school level (Creemers & Kyriakides, 2010b).
- 4) A European study testing the validity of the dynamic model (Kyriakides et al., 2012).
- 5) A study in Canada searching for grouping of teacher factors: stages of effective teaching (Janosz, Archambault, & Kyriakides, 2011).
- 6) An experimental study investigating the impact of a teacher professional development approach based on DASI upon student achievement (Antoniou & Kyriakides, 2011).

Meta-analyses:

- 1) A quantitative synthesis of 67 studies exploring the impact of school factors on student achievement (Kyriakides, Creemers, Antoniou & Demetriou, 2010).
- 2) A quantitative synthesis of 88 studies searching for the impact of generic teaching skills on student achievement (Kyriakides & Chirstoforou, 2011).

Chapter 3

The Dynamic Approach to School Improvement

Introduction

In the previous chapter, the dynamic model was presented and evidence supporting its validity was provided. Given that the dynamic model was developed in order to establish stronger links between EER and improvement of practice, in this chapter we show how the dynamic model can be used in policy and practice for improvement purposes. Thus, the Dynamic Approach to School Improvement (DASI) is presented. Specifically, we refer to strategies that can be used by different stakeholders who are planning to make use of DASI to improve practice at different levels.

Before we move on to presenting DASI, it is stressed that the improvement efforts should be based at the school level and that these can be undertaken from stakeholders who support the idea that schools should always search for improvement, irrespective of how effective they are. School stakeholders are expected to look at the relations between the school factors and the aims of their specific improvement project. This implies that school stakeholders should make use of the literature associated with the aims of the specific improvement project and merge the findings of this research area with the value assumptions and essential characteristics of the dynamic model. This is feasible as the model is flexible enough and able to incorporate evidence stemming from different research areas (knowledge and discipline). Yet equally it has its own assumptions which deal with quality of teaching and the school learning environment, that are supported by evidence (see Chapter 2) and should be taken into account when establishing improvement strategies and action plans.

In this chapter, the main steps of the dynamic approach to school improvement are presented. It is shown that these steps can be followed by stakeholders operating at different levels of the educational system such as the classroom, the school and the context level. This is due to the fact that in the dynamic model, the factors operating at different levels are able to influence the quality of the school learning environment, the quality of teaching, and the learning and its outcomes. Before we introduce these steps, the conditions under which this approach can be applied are discussed. First, it is important to stress that schools in most countries are under pressure for improvement. External evaluation through school inspection or through the announcement of student results is expected to impose change. The various accountability systems which have been developed are based on the assumption that the announcement of the results of a summative evaluation will induce improvement efforts by schools, especially for those with relatively low performance (Murphy, 2009; Reynolds, 1996). However, the proposed approach is not based on this assumption for several reasons. First, studies testing the validity of the model reveal that improvement efforts should take place in all schools irrespective of how effective they are (see Chapter 2). For example, it has been shown that schools which were among the most effective and did not take any action to improve the functioning

of their school factors dropped to average effectiveness (Creemers & Kyriakides, 2010a). Second, the dynamic model focuses not only on the school policy, but also on the actions taken to improve this policy, as factors associated with student achievement and recent studies reveal that actions taken to improve teaching and the school learning environment are strongly associated with the outcomes of schooling. Third, the assumption that having an accountability system will make schools more effective, has already been contradicted from evaluation studies showing that schools which were found to be among the least effective did not manage to improve their status simply because of the pressure placed upon them (Good, Wiley, & Sabers, 2010; Murphy, 2009).

On the contrary, DASI is based on the assumption that not all schools are equally effective and therefore that the same improvement strategy should not be used for all in order to help them improve their effectiveness. For example, schools which are among the most effective and have in place their own mechanisms for improving the functioning of their school factors may not necessarily need external support to develop their School Self Evaluation (SSE) mechanisms and design their strategies and action plans for improvement. On the other hand, those schools which are among the least effective may need external support and more systematic guidance to establish strategies and action plans to improve their effectiveness status. At the same time, it should be acknowledged that for each of these groups of schools, different priorities for improvement can be identified. Even for schools which are amongst the most effective, there is still space for improvement of some factors associated with effectiveness and there remains a need to identify priorities and develop strategies and actions plans. In order to achieve this aim, external support may be required. The proposed approach takes into account the dynamic nature of educational effectiveness and supports that different improvement strategies should be used from schools, depending on the knowledge, experiences and aims that are addressed, but also that improvement strategies must be based on evidence.

Each school is expected to develop its own strategies and action plans for improvement, but it is acknowledged that support to schools should also be offered by an Advisory and Research Team (A&RTeam), which will be able to provide technical expertise and the available knowledge-base on improvement of factors addressed by the school. Although a school is treated as a professional community responsible for designing and implementing its own improvement strategies and action plans, school stakeholders are not left alone to design and implement their strategies and actions, but are encouraged to make use not only of the A&RTeam, but also of other available resources within and outside of the school. For example, schools which may develop strategies and action plans to deal with bullying could ask for support from not only the A&RTeam, who will help identify improvement priorities and develop such strategies, but also from researchers and clinical psychologists with experience of bullying incidents, who may also help them to deal with specific students that need special treatment (Kyriakides, Bosker, Muijs, Papadatos, & Van Petegem, 2011). Therefore, a systematic research based approach to design, implement, and evaluate improvement efforts, is promoted by DASI. Finally, it is important to note that school stakeholders should be encouraged to

treat the challenges and/or problems that their school is facing as a chance for them to define new goals of schooling and to develop strategies to improve the functioning of those factors included in the dynamic model that will help them achieve these new goals (see Creemers & Kyriakides, 2012).

Major Steps for Effective School Improvement

In the introductory part of this chapter, we discuss the main conditions upon which DASI is based. In this section, the major steps expected to be followed by schools are presented. These are further explored in the next chapter, where we provide practical suggestions to schools on using DASI to promote quality in education.

A) Establishing clarity and consensus about the general aims of school improvement by considering student learning as the main function of the school

The first step of any school improvement effort is based on the assumption that it is important to start with a clear understanding of the destination and how improvement of quality in education will be achieved. This could be considered as “a purposeful task analysis” (Wiggins & McTighe, 1998, p.8), which suggests a planning sequence. Moreover, commitment to collaborative work needs to be established, however as Fullan (2001) emphasises, people have different perceptions of change. Thus, it is difficult to reach consensus among the participants in school reform efforts, albeit a crucial agreement. Therefore, it is important to establish procedures to ensure clear understanding among stakeholders as to the aims of school improvement. At this very first stage of DASI, two major issues are discussed with the school stakeholders. First, it should be made clear that DASI is based on the assumption that student learning should be considered as the ultimate aim of any school improvement effort. Unless learning and learning outcomes are improved, any school improvement effort should not be considered successful no matter how much it may manage to improve any aspect of the climate of the school or any other factor which is not related with student learning. This is due to the fact that learning is the mission of the school and emphasis should be placed on improving learning outcomes.

At this point, presenting the DASI to school stakeholders can assist with the realisation that the ultimate aim of any school reform effort should be to improve student achievement across the school. Presenting DASI may also help school stakeholders design improvement programmes for a single school, building relevant SSE mechanisms, or even to design an improvement project for a network of schools which is supported by a central agency (e.g. a Local Education Authority or a professional association, such as the association of teachers of mathematics). Specifically, the theoretical framework of DASI (i.e., the dynamic model) may assist school stakeholders to define not only the ultimate aim of the school improvement effort, which should be concerned with the improvement of learning outcomes, but also its intermediate objectives which may contribute in the achievement of aims associated with the challenges that they are facing (e.g. reduction of school drop-

out). Since DASI is based on the dynamic model which refers to factors that are changeable and associated with student learning outcomes, the intermediate objectives should also address the needs of schools to improve the functioning of specific factors included in the dynamic model (see step B).

In presenting DASI, it is likely that not every school teacher will agree or commit himself/herself to the school improvement project. Although the approach promoted in this handbook gives emphasis to the involvement of the whole-school community, it is not feasible to expect that all individual members of the school community will participate in the improvement project. However, it is critical at this point that a sufficient number of teachers (key persons) agree with the main aim and the intermediate objectives of the improvement project and are willing to participate by offering their time and energy for the successful implementation of the project. Commitment to the implementation of the project by both the school community and the research advisory team must be established before moving on to the second step of this approach, which is concerned with the identification of school priorities for improvement.

B) Establishing clarity and consensus about the aims of school improvement by addressing school factors which are able to influence learning and teaching

As mentioned in Chapter 2, school level factors are expected to influence not only student achievement, but also the functioning of classroom level factors (see Figure 2.1). Therefore, designing improvement efforts focusing on the classroom level factors may improve the teaching practice of individuals, yet may not necessarily improve the school learning environment. In such cases, teachers who improve aspects of their teaching practice addressed by a specific improvement effort will require, at some stage, another type of support to improve other teaching skills. However, if the reform does not aim to improve the school learning environment, such support may be unavailable when required and the lasting effect of a programme that aims to improve teaching practice could be questioned. Equally, DASI is based on the assumption that school stakeholders should develop interventions or improvement efforts, which will not only improve the functioning of the school level factors, but ultimately will promote quality of teaching and raise student achievement. Therefore, a school improvement effort is focused on how to improve the functioning of factors operating at the school level and through this notion to improve teaching practice and promote student learning and learning outcomes.

In order to elaborate further on this point, readers are reminded that the two main overarching school factors are concerned with the school policy for teaching and the school learning environment yet, the model does not only refer to these. Actions taken to improve these two aspects of school policy are viewed as characteristics of effective schools. This implies that schools cannot remain effective unless actions are taken to improve the teaching practice and their learning environment. This is an essential characteristic of the model which highlights its dynamic nature. Therefore, the

assumption that effectiveness is a stable characteristic of a school over time is not promoted by the dynamic model. On the contrary, fluctuations in results over time may reflect 'real' improvement or decline in school/teacher performance, as well as any random variations. Changes in results may be explained by planned or naturally occurring school/teacher improvement, or by stable school policies and teacher practices in a changing context, or by both.

Therefore, effective schooling is seen as a dynamic, ongoing process. To be considered effective, schools/educational systems are expected to adapt with the changing contexts. Similarly, ineffective schools may be encouraged by the community and local school boards to improve. This notion is consistent with the contingency theory (Donaldson, 2001; Mintzberg, 1979) and can be viewed as one of the main assumptions upon which the dynamic model is based (see Creemers & Kyriakides, 2008). Therefore, the dynamic model presents the process of improving effectiveness as one that should take place in all schools, irrespective of how effective they are. Moreover, it implies that schools which are among the most effective should take action to remain so and that such actions should have a direct effect on improving teaching and the SLE (Creemers & Kyriakides, 2010a).

Therefore presenting the dynamic model, particularly its school level factors, can assist school stakeholders' understanding of the necessity of developing a SSE mechanism, which will attempt to collect data about each factor and its dimensions. In this way, school stakeholders are not only aware of the factors that need to be addressed, they further understand that addressing them can help achieve better learning outcomes. By following this approach, the authors take into account that schools should not only make use of evidence emerging from EER, but also understand the processes through which learning can be achieved in classrooms, schools and externally. For example, factors concerned with school policy on teaching expect all stakeholders (teachers, parents and students) to ensure that the use of teaching time is maximised, that extra-curricular learning opportunities are offered to students and that teaching quality is improved. Although specific aspects of these factors may be more relevant for some stakeholders than others, it is necessary to involve each of them in an improvement strategy and for this reason partnership policy has a central role in DASI. Resultantly, the teachers and other school stakeholders involved in the project should be persuaded that the factors included in the model are associated with learning and learning outcomes, and need to be addressed in order to improve the effectiveness of their schools, which was stated as the main aim of school improvement (see step A). It is also important to stress that *not all factors can be addressed at once* and that specific improvement priorities should be identified instead, to aid the development of a more systematic and focused intervention. Thus, at this point data should be collected with a view to identifying priorities for improvement, which will concern factor(s) that are not functioning at a satisfactory level. The next step therefore is concerned with the collection of evaluation data and the identification of improvement priorities.

C) Collecting evaluation data and identifying priorities for improvement

The use of a valid theory to design an improvement effort cannot in itself ensure that its aims will be achieved, even if the proposed reform is implemented in the way it was designed (Kyriakides, Charalambous, Philippou, & Campbell, 2006). In this chapter, we do not only argue for following a theory-driven approach for improving school quality, as emphasis is also placed on collecting data in order to identify the strengths and weaknesses of a school and design relevant improvement efforts. The importance of using an evidence-based approach for school improvement reflects the nature of the dynamic model by treating school policy, teaching, and the SLE as important overarching school level factors to be evaluated. Therefore, the definition of factors at the school and classroom level, especially their five measurement dimensions, can be used first for designing instruments that will help schools collect data about the functioning of these factors. Research instruments of studies investigating the validity of the dynamic model can be used (see Creemers & Kyriakides, 2012). The strengths and weaknesses of schools will be identified based on the results that emerge from measuring the functioning of the school and classroom level factors. Moreover stakeholders may identify priorities for improving the functioning of specific factors and/or grouping of factors. At this point readers are reminded that, according to the dynamic model, each factor is defined in relation to five dimensions. This implies that evaluation data may reveal more than one improvement priority for each school. For example, using these five dimensions to measure the quality of teaching could produce different teaching profiles which are associated with student achievement, as some empirical studies have demonstrated (see Creemers, Kyriakides, & Antoniou, 2013).

Therefore, using the dynamic model to collect data on teacher behaviour in the classroom will reveal the extent to which their teaching practices fit these profiles and whether specific changes to their practices are needed to develop a more effective profile. For example, teachers may discover that the effectiveness of a group of teachers is limited due to the fact that: a) they do not use enough teaching modelling activities that could assist students in using or developing strategies for solving problems and b) the great majority of the orientation tasks they offer are at the introduction of the lesson. The identification of more than one weakness may not be helpful for ascertaining how one can develop professionally, however due to the dynamic nature of the model, different professional development priorities for each teacher may be identified. This is due to the effects of an improved factor on student outcomes, depending on the stage at which each individual teacher is when measurement occurs (Creemers & Kyriakides, 2009). Thus a teacher who attempts to improve his/her own orientation skills may result in improving student outcomes more than improving his/her own skills in teaching modelling. Yet a completely different interpretation could be drawn for another teacher, by focusing on the situation at which he/she is at that time. Following this approach, actions taken to improve teaching may prove more flexible, as the support provided to individual teachers

may differ in order to meet the professional needs of each one, or for each group of teachers in a school, or a network of schools.

School stakeholders may draw similar conclusions when using the dynamic model to collect data on the functioning of the overarching school factors concerned with the SLE. Thus, the priorities of school improvement efforts concerned with either teaching or the SLE must be considered in relation to the current situation of the specific schools and teachers involved. By the end of this step, data on the functioning of school factors will be available and analysis of data will reveal which factors or grouping of factors need to be addressed. By presenting the results of the evaluation to the various stakeholders the improvement priorities of the school are made clear, and all stakeholders should be in a position to acknowledge that improvement of learning will be achieved by commitment to the improvement of relevant factor(s). In the next step, strategies and action plans to address these priorities should be developed. In order to achieve this aim, school stakeholders should make use of available evidence, providing guidelines and suggestions on how the functioning of these factors can be improved.

D) Designing school improvement strategies and action plans by considering the available knowledge-base about the factor(s) addressed

The dynamic model refers to school factors which were found to be associated with student achievement. For each of these factors a number of studies and meta-analyses have been conducted, which do not only look at the impact of the factor, but also refer to the conditions under which these factors have stronger effects. Consequently, the dynamic model refers to qualitative characteristics of the functioning of factors which increase their impact on learning. For example, the factor concerned with the school partnership policy takes into account the varying types of parental involvement that occur in different schools, and shows under which conditions each type of involvement is effective (see Chapter 2). Similarly, policy on homework is treated as an important aspect of the overarching factor concerned with policy on teaching. When developing school policy, issues that arise from the literature need to be taken into account, for example the type of homework that should be assigned to students and the need to correct homework. Schools should therefore draw lessons from the literature on the factors that are addressed, and develop their strategies and action plans accordingly.

At this point, the role of the research advisory team is considered to be essential. Members of this team should be able to share their expertise and knowledge with school stakeholders, providing additional input to existing ideas, experiences and knowledge in order to develop their strategies and action plans. Although the action plans were initially developed by school stakeholders, members of the research advisory team should provide schools with guidelines of how to improve the functioning of the factors. Whilst the research advisory team is expected to provide suggestions based on the research evidence, it is the schools themselves that decide on the content of their action plans, having considered the available research evidence and evaluation data (step C). The dynamic model supports

that effective policies are not only those which are clear to the stakeholders and address their needs, but also take into account the ability of the stakeholders to implement the policy (see Chapter 2). For this reason the final decision is taken by the school, as development of action plans does not only require putting into practice what is available in the literature, but also adopting the guidelines to the needs and abilities of the stakeholders of each school. In developing action plans it is important to specify which tasks need to be undertaken, who is going to be responsible for implementing each task, when each task is expected to be implemented and which resources should be provided to the stakeholders to implement these tasks. In several cases, some parts of the action plans cannot be implemented and unless evaluation data is collected, the school stakeholders will not take decisions on how to improve their action plans and resultantly the aims of the school improvement project will not be achieved. Therefore school stakeholders should not only develop strategies and action plans which they are ready to implement, but should also attempt to establish evaluation mechanisms which will enable them to improve their action plans.

E) Monitoring the implementation of the improvement project through establishing formative evaluation mechanisms

At this step, school stakeholders are expected to develop internal evaluation mechanisms to monitor the progress of their improvement efforts. A developmental evaluation strategy should be produced and the formative aim of school evaluation should be achieved for schools to identify how their action plans can be improved. The role of the research advisory team is important, as their expertise in conducting evaluation is shared with school stakeholders. However, the DASI is based on the assumption that school stakeholders should be directly involved in conducting formative evaluation. Thereby, an internal school evaluation mechanism is developed and teachers are encouraged to reflect on their abilities, not just to implement, but also to improve the functioning of school factors. Thus, the results emerging from this evaluation mechanism can be used to improve action plans, and simultaneously to create an environment which supports the gathering of evidence for improvement purposes. Such a setting is necessary for building self-evaluation mechanisms, both at the individual (i.e. teacher self-evaluation) and school level.

The dynamic model is based on the assumption that stakeholders should be able to establish a developmental evaluation strategy, in their attempt to improve the effectiveness status of their schools. According to the dynamic model, school evaluation is treated as an overarching school factor comprised of stages, which implies that a continuous model of school evaluation will allow schools to adapt their policy decisions based on the needs of different groups of school stakeholders (see Creemers & Kyriakides, 2010a). Thus, the dynamic model supports the notion that a developmental evaluation strategy may contribute to the improvement of the effectiveness status of schools, which has been supported through substantial research evidence (Kyriakides, 2008; Gray et al. 1999; Shaw & Replogle, 1996).

This strategy for improving effectiveness has a number of significant features. The evaluation process is expected to assist the implementation and development of a school policy, as the establishment of targets and performance indicators may specify the developmental process of the partnership policy. Moreover evaluation data may be related, through the evaluation questions, to the aims of the policy. Consequently, a logical chain of action can be established that relates aims to targets, evaluation questions, and particular information sources. However, the evaluation process is likely to be more complex in practice. Once the evaluation process is underway, different working groups of stakeholders (e.g. coordinators of partnership policy, teachers of different subjects) may implement areas of the policy at differing rates (Kyriakides, 2005b). The extent to which there is a difference between the implementation of a reform policy and the design of an intervention will be identified. Thus, the results of formative evaluation may assist stakeholders' decisions for improving the quality of their strategies and action plans for improvement, and eventually the functioning of school factors. The school-level factors included in the dynamic model are based on evidence supporting the use of this strategy to improve effectiveness. Beyond this assumption, the model may also help school stakeholders to establish targets and performance indicators and thereby specify the developmental process of designing and implementing their school improvement strategies and action plans.

As a result of establishing formative evaluation mechanisms and collecting data, school stakeholders can identify weaknesses in their action plans. Thus, decisions must be made on how these action plans can be improved. Exchange of ideas and experiences between stakeholders and the A&RTeam is likely to help school stakeholders agree on how to improve their action plans, by taking into account the needs of those involved in each task and their ability to implement it. If extra support needs to be offered to those who are expected to implement some tasks of the school action plans, the A&RTeam can give suggestions on the kind of support that could be provided. Again the authors stress that the final decision should be the responsibility of the school stakeholders, who are also expected to evaluate the implementation of the modified action plans for formative reasons, especially since it is likely that further weaknesses to the modified action plans may emerge. The establishment of formative evaluation mechanisms is considered important, as the use of the available knowledge-base to develop strategies and action plans does not necessarily result in a school's development of the perfect solution for improving the functioning of school factors. On the contrary, it is often taken for granted that the school stakeholders and the A&RTeam are not in a position to predict all the possible obstacles that may arise during the implementation of the school action plans. Thus by building a continuous evaluation mechanism, schools can identify problems with their action plans and improve them further. Although school stakeholders may be able to effectively solve all problems that arise and not have to further develop their action plans resultantly, it is important to consider that the undertaken tasks will not necessarily remain the same throughout the project. According to the

stage dimension of the dynamic model, actions associated with a factor need to be implemented over time, but these actions may not necessarily be the same (see Creemers & Kyriakides, 2010b).

F) Conduct a summative evaluation to measure the impact of DASI

At some stage, school stakeholders (with the support of the research advisory team) should measure the impact of their improvement efforts upon the improvement of the functioning of school factors and upon the learning outcomes (i.e. the intermediate and ultimate aims of improvement). The results of a summative evaluation will assist school stakeholders to determine whether it is worthwhile to implement the improvement project, at the expense of their effort. Positive findings of summative evaluations are expected to increase the commitment of a school to this approach. Announcement of the results may even serve to change the attitudes of stakeholders not actively involved in the project and encourage participation in a project that appears promising. Moreover, through summative evaluation the theory which provides the basis for the intervention can be tested, for example some schools may develop strategies and action plans concerned with specific school factors which aim to reduce drop out level. Summative evaluation does not only allow us to ascertain if the drop out level has reduced, it also tests the assumption that improvement of school factors has an impact on reducing drop out. Finally, those involved in a project using DASI are expected to consider the evidence and collection of data as essential issues in decision making. Therefore, summative evaluation is required in order to help school stakeholders make decisions on whether their project is worthwhile, or whether they should reconsider their strategies and action plans.

In order to conduct a summative evaluation of their improvement project, school stakeholders (with the support of the research and advisory team) need to collect comparable data with those that emerge from step C, and evaluate their interventions by following a value-added assessment approach. At this point the research and advisory team has an important role to play, as their members have relevant expertise and can design the summative evaluation, as well as analyse quantitative data using appropriate advanced techniques (Creemers et al., 2010). Evidence supporting the validity of the instruments and the reliability of the measures could be produced by the A&RTeam, and the impact of DASI on different dependent variables should be examined. Summative evaluation will not only help stakeholders measure the impact of their intervention, it will also test the theory upon which the intervention is based.

Finally, the results of the summative evaluation should help school stakeholders decide whether the factor(s) addressed have been substantially improved, and resultantly if a new priority for improvement and new action plans need to be developed. If a new priority is identified, school stakeholders (with the support of the A&RTeam) should: a) develop new action plans, b) give responsibilities to individual stakeholders for implementing them, and c) establish monitoring mechanisms. In some cases, the collection of further data may be required for the development of

action plans, especially if factors other than those included in the dynamic model are associated with the achievement of the aims of the intervention.

Overview of the Major steps of DASI and Supporting Evidence

Figure 3.1 illustrates the steps of DASI. It is shown that school stakeholders and the A&RTeam are expected to be actively involved in each step of DASI. Their ability to work together and exchange skills, expertise and experiences is critical to the success of the school improvement project. Readers can also see that the first two steps are concerned with the establishment of clarity and consensus about the aims of the school improvement project. Initially, the importance of promoting student learning is stressed (step A). Thus, school stakeholders and the A&RTeam are expected to develop the general aim of their intervention by taking into account that promotion of student learning should be the ultimate aim of any intervention that takes place in schools. At the second step, the dynamic model and its factors are presented to the school stakeholders. This presentation will help them understand how and why addressing the school factors promotes student learning. Thus, the specific aims of their improvement project could be developed and the agenda of their school self evaluation can be defined. Specifically, Figure 3.1 shows that at the third step schools should develop their own school self evaluation mechanisms in order to collect and analyse data about the functioning of school factors and identify their priority area(s) for improvement. The fourth step is one of the most important steps of DASI. The A&RTeam should work closely with the school stakeholders in order to help them define their strategies and action plans for improvement. School stakeholders are expected to take into account the available knowledge base of EER and adopt the guidelines emerged from the literature on their school context (with the help of the A&RTeam) in order to improve the functioning of school factors addressed by their project. Then school stakeholders and the A&RTeam should develop mechanisms for monitoring the implementation of the intervention (see step E). At this point, we stress the role of formative evaluation and the importance of using evaluation data to further develop their strategies and action plans. Finally, the A&RTeam and the school stakeholders should develop summative evaluation mechanisms in order to measure the impact of DASI on promoting student learning. This step will not only help school stakeholders test the theory upon which their intervention is based but may also reveal the importance of identifying a new priority area for improvement. If summative evaluation reveals that a school has managed to substantially improve the functioning of the factor addressed, school stakeholders and the A&RTeam may decide to collect new evaluation data and identify a new priority improvement area. By conducting school self evaluation (moving back to step C) the new priority area will be identified and a new improvement project will be developed and implemented. It can therefore be claimed that Figure 3.1 shows that schools should always search for improving their effectiveness status irrespective of how effective they are and this element of DASI is in line with the dynamic character of the nature of educational effectiveness.

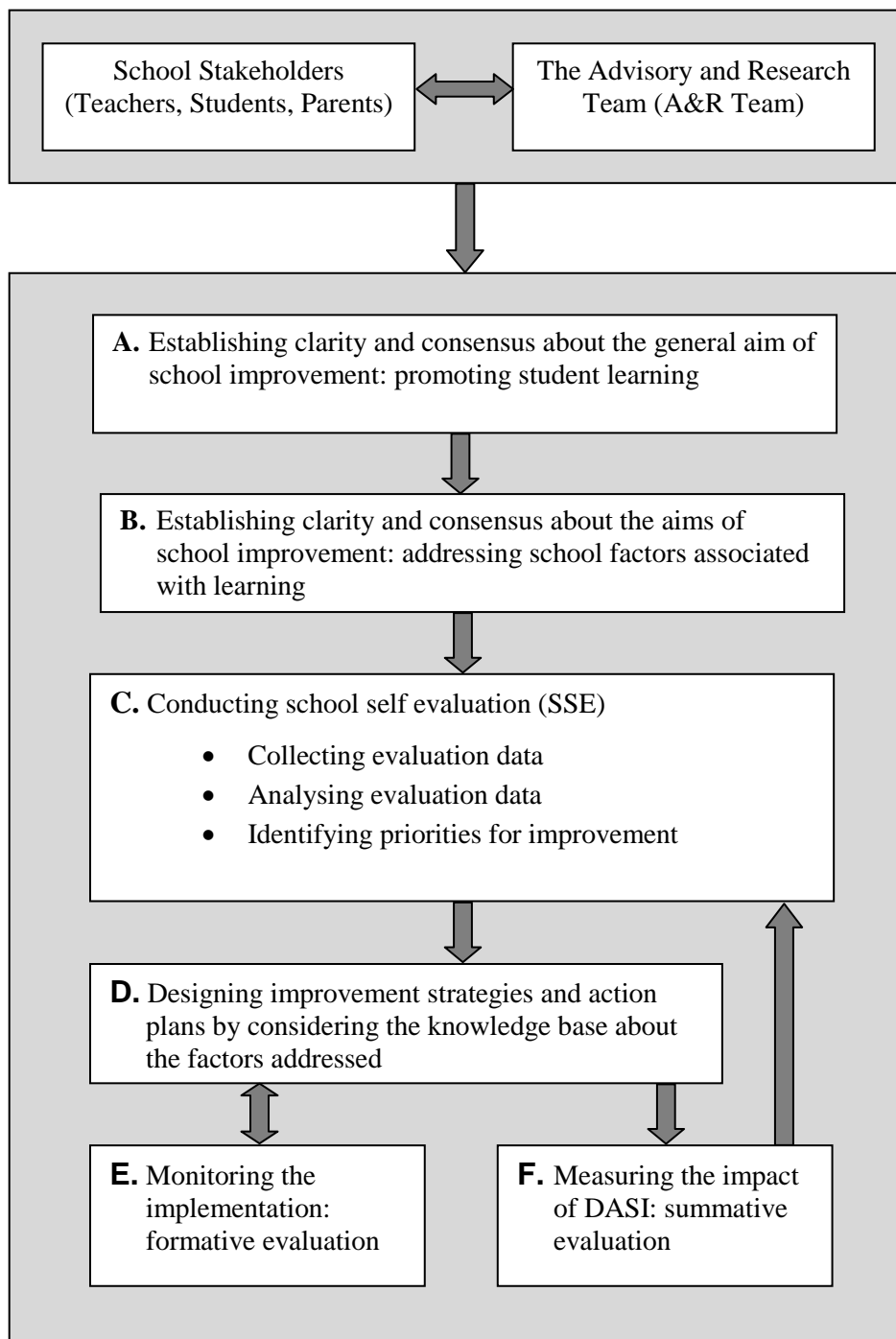


Figure 3.1: The major steps of the Dynamic Approach to School Improvement (DASI)

In order to demonstrate the development and use of this approach in educational practice, this section refers to the main results of projects investigating the impact of DASI on student learning outcomes. The projects presented address important challenges which many schools in different countries face, such as bullying prevention (Kyriakides, Bosker, Muijs, Papadatos, & Van Petegem, 2011) and promoting teacher professional development (e.g., Antoniou & Kyriakides, 2011). The findings of

these experimental studies show that DASI helped participating teachers and schools to develop their own strategies and actions for improvement, in relation to specific challenges they faced, and also assisted in the improvement of their effectiveness status.

The first study investigates the impact of three different approaches to establishing SSE mechanisms upon student achievement. Using group randomization, four groups of schools were created. Different types of support were provided to the first three groups of schools in order to help them establish SSE mechanisms whereas no SSE mechanism was established in any of the school of the fourth group (control group). At the first group, school stakeholders were offered the opportunity to develop their own SSE mechanisms and design their own improvement strategies using a participatory approach. The second group followed the same process to design SSE mechanisms as the first but before introducing this approach, support was offered to the stakeholders in order to face and reduce their concerns about SSE. Therefore, the political dimension of introducing an evaluation reform was taken into account. The third group was asked to develop SSE mechanisms and take decisions for their improvement strategies which are in line with the knowledge base of educational effectiveness research. Specifically, this group made use of DASI to develop SSE mechanisms and identify their improvement priorities. All three experimental groups had better results than the control group but the impact of the third approach on student achievement was higher than the impact of the other two approaches to SSE (see Demetriou & Kyriakides, 2012). This study shows that DASI can be used to help schools develop school self-evaluation mechanisms, and design strategies and action plans for improving their effectiveness. In addition, the A&RTeam was found to have an important role in supporting schools, to address school factors related to school effectiveness and also design strategies and action plans in line with the literature. Schools which made use of DASI managed to improve their effectiveness status more than any other intervention groups.

The second study was conducted in five European countries and its main aim was to investigate the impact of using DASI to help schools face and reduce bullying through integrating research on bullying with Educational Effectiveness Research. A network of approximately 15 schools in each participating country (i.e. Belgium, Cyprus, England, Greece, and the Netherlands) received support to use DASI in order to improve the functioning of school factors included in the dynamic model of educational effectiveness. The Revised Olweus Bully/Victim Questionnaire was administered to students of the experimental (n=1461) and control (n=1535) group at the beginning and at the end of the intervention. Using multilevel modelling techniques, it was found out that schools which made use of DASI were able to reduce bullying at a significantly higher level than the schools of the control group. This European study shows that DASI can be used for schools which are facing important challenges that affect their school learning environment. Specifically, it was shown that by integrating research on bullying with literature on educational effectiveness, the A&RTeam were able to provide support to schools to identify their improvement priorities and reduce bullying. The fact that DASI was applied in different educational settings suggests that the theoretical

framework of this approach is sufficiently flexible to be used in different school contexts. In addition, the theoretical framework of DASI provides possibilities to integrate research in specific areas, such as the aforementioned bullying research, with the knowledge-base of educational effectiveness and improvement. At the same time, these two projects can be seen as starting points for schools to develop strategies and actions for other challenges they might face in the future, such as the reduction of drop-out rates or providing equal opportunities to various groups of students.

Two other studies investigate the extent to which DASI can be used for teacher professional development purposes (Antoniou & Kyriakides, 2011; Christoforidou, Kyriakides, & Antoniou, 2012). These two studies are based on previous research findings related with teacher behaviour and student outcomes which revealed grouping of factors at the teacher level of the dynamic model of educational effectiveness. Specifically research findings revealed that the teaching skills could be classified into five stages, structured in a developmental order and associated with student outcomes (Kyriakides et al., 2009). This finding is in line with the assumptions of the stage models of professional development (e.g., Berliner, 1992). What seems to be the principle advancement is that the content of each stage is now specifically determined in terms of specific teaching skills, whereas previous stage models suffered from vagueness and lack of clarity on what could actually constitute each developmental stage (Dall’Alba & Sandberg, 2006). Specific strategies for improving effectiveness that are more comprehensive in nature may emerge by looking at the grouping of teacher factors of the dynamic model. This grouping of factors is taken into account by DASI in establishing a teacher professional development approach (see Creemers et al., 2013). This approach lies between the two dominant approaches in teacher professional development: the Competency-Based Approach (CBA) and the Holistic Approach (HA). The CBA promotes teacher professional development that is concerned with specific teaching skills each time. A list of strategies has been developed by experts (Sprinthall, Reiman, & Thies-Sprinthall, 1996) which are highly explicit (e.g., how to greet students/praise/ask high level questions) and teachers are expected to master each skill separately. The rather mechanistic procedure of providing training to teachers for each skill separately does not allow the critical and creative thinking of the teachers to be expanded nor is taken into consideration at the delivery of such kind of programs. On the other hand, the HA is focused on encouraging reflection of teaching practices, experiences, and beliefs (Golby & Viant, 2007). Emphasis is given to approaches involving reflective capabilities of observation, analysis, interpretation, and decision-making (Schon, 1983; Zeichner, 1987) which enable teachers to review critically their teaching practice. However, there is little solid empirical evidence that supports the view that the HA results in superior teaching practices (Cornford, 2002). The main critique was that the HA lacks a grounded theoretical base on which specific teaching skills could be developed. In addition, the HA neglects educational effectiveness theory and relies on the assumption that reflective practitioners can handle their improvement based solely on their own experiences and critical thinking. In this context, DASI aims to overcome the main weaknesses of both approaches and the

main aim of the study reported here was to compare the impact of the DASI and the HA upon teaching skills and student achievement. This experimental study shows that teachers employing the DASI managed to improve their teaching skills more than teachers employing the HA. The use of the DASI also had a significant impact on student achievement gains in mathematics (see Antoniou & Kyriakides, 2011).

The other study is concerned with teacher professional development in the area of assessment and compares DASI with CBA (i.e., the other dominant approach to teacher professional development). More specifically, assessment skills of 178 teachers and achievement of their students were measured at the beginning and at the end of the intervention. Teachers who agreed to participate at the teacher professional development program and found to be at a certain developmental stage were randomly allocated evenly into two groups. The first group (n=36) employed the DIA and the second (n=36) the CBA. It was found out that teachers participating in each intervention group managed to improve their assessment skills more than the control group (n=98) but regression analysis revealed that the DASI had bigger impact on teacher assessment skills than CBA. In addition, the DASI was found to have an impact on student achievement in mathematics. Therefore the results of these two studies on using DASI for teacher professional development seem to reveal that rather than disputing the use of approaches either too focused on isolated teaching skills or too broad to address teacher's specific needs, teacher professional development can be based on the dynamic approach which is more effective than traditional approaches to teacher education. Currently, a study investigating ways to expand the use of DASI for providing school based in-service training approaches is conducted (Kyriakides, Panayiotou, Creemers, & Antoniou, 2013). This study concentrates on the added-value of offering teacher professional development programs at school level for improving not only the quality of teaching but also the functioning of school factors.

Table 3.1. Experimental studies investigating the impact of using DASI rather than participatory approaches that are based on practitioner’s expertise

Area of investigation	Impact on factors	Ultimate aims
1. Using DASI to establish school self evaluation mechanisms in primary schools (n=60)	Not examined since schools had to deal with different improvement areas	DASI had an impact on student achievement
2. Using DASI rather than the HA to offer INSET to primary teachers (n=130)	Only teachers employing DASI managed to improve their teaching skills	DASI had an impact on student achievement
3. Integrating DASI with research on bullying to help schools (n=79) in five European countries to establish strategies to face and reduce bullying	DASI had an impact on school factors	DASI had an impact on reducing bullying
4. Using DASI rather than the CBA to offer INSET course on assessment (n=240)	DASI had a stronger impact than CBA on improving assessment skills of teachers at stages 2, 3 and 4	DASI had an impact on student achievement

1. The impact of school self-evaluation upon student achievement: a group randomisation study (Demetriou & Kyriakides, 2012).
2. The impact of a dynamic approach to professional development on teacher instruction and student learning: results from an experimental study (Antoniou & Kyriakides, 2011).
3. Using the dynamic model of educational effectiveness to design strategies and actions to face bullying (Kyriakides, Creemers, Bosker, Muijs, Rekers-Mombarg, Papastilianou, Van Petegem, & Pearson, paper under review).
4. Searching for stages of teacher skills in assessment (Christoforidou, Kyriakides, & Antoniou, paper under review).

Table 3.1 provides an overview of the results of the projects investigating the impact of DASI. This table shows that these four studies reveal that schools in different educational setting can improve their effectiveness status by making use of DASI. These studies also address improvement at different levels and show that DASI can have an impact on improving the functioning of both school and teacher factors and through that to improve student learning outcomes. Since the ERP on promoting quality in education reveals that there is ample room for improvement both at the teacher and school level in each participating country, we advocate the use of DASI for establishing improvement strategies and action plans addressing teacher and school factors. Moreover, the last chapter of the handbook provides some more practical suggestions to help school stakeholders make use of DASI and design strategies and action plans for school improvement.

Chapter 4

Using dasi for school improvement purposes: Translating the Approach into Actions

Introduction

This chapter provides some more practical suggestions to help school stakeholders make use of DASI and design strategies and action plans for school improvement. In the first section of this chapter, we explain the importance of school self-evaluation and present the steps that schools could follow to establish their own school self-evaluation mechanisms. These steps are presented in a practical way and illustrated by examples of schools that already used this approach. We also explain how data on the functioning of school and classroom factors can be collected and analysed. In the last part of this chapter, we give practical suggestions to schools on activities that could be undertaken in order to improve the functioning of each school factor.

Why School Self Evaluation is an Essential Part of DASI?

Devos (1998) argues that SSE should be seen as “a process mainly initiated by the school to collect systematic information about the school functioning, to analyze and judge this information regarding the quality of the school’s education and to make decisions that provide recommendations” (p. 1-2). In this handbook, it also is argued that the overarching goals for SSE are twofold: to improve the quality of the organization and to improve teaching and learning. For this reason, SSE is conducted for formative reasons and can be treated as an essential part of the DASI. In practice, it implies that schools which conduct SSE are not simply expected to collect data and announce results on what works and what does not work in a school. This is usually the task of external school evaluation and studies investigating the consequential validity of external evaluation reveal that they very rarely have an impact on introducing school improvement strategies that affect learning and learning outcomes (e.g., Kane, 2001; Kifer, 2001; Kyriakides, 2004).

The end product of SSE is not only the identification of priorities for improvement, as may be the case in external school evaluations (Kyriakides & Campbell, 2004). In addition to identifying areas of improvement, action plans for improvement are also expected to be implemented in order to improve the functioning of school and increase student learning outcomes (see the last part of this chapter where suggestions for establishing action plans are given). Two of the overarching school factors included in the dynamic model refer to school evaluation which is seen as essential for school stakeholders in their attempt to improve the functioning of the other two overarching school factors (school policy on teaching and school policy on the school learning environment). This view about the role of SSE is reflected in Figure 3.1 (presenting DASI) which shows that improvement process cannot be treated as linear but should be viewed instead as dynamic in character.

The essential difference of the DASI to other approaches on school improvement is that our approach to school improvement is based on the assumption that SSE should be concerned with specific school factors that are found to be associated with student achievement. These two major factors are school policy on teaching and the school policy on the SLE. This is due to the fact that these two overarching factors are related with learning and learning outcomes. Since practicality is a property that needs to be taken into account for any evaluation, DASI promotes the idea that SSE should be *about the two most important overarching school factors* and not to cover anything that may happen in a school. In order to elaborate this point to a group of 25 school managers, we invited them to define their own criteria for evaluating their schools. Each of them was asked to put down the first five criteria that come to his/her minds as a brainstorming activity. As a result of this task, we managed to develop a questionnaire with 115 criteria of school evaluation, some of which were not related either with teaching or with the school learning environment. The school leaders were then asked to reflect on this list of criteria. It was agreed that the list was too large to be able to collect data on all of the factors. So the list was reduced by only using factors which were found to be associated with student achievement. In Chapter 3, an experimental study on using DASI to establish SSE mechanisms is described. This study shows that only those schools which addressed school factors included in the dynamic model managed to improve their effectiveness status (see Demetriou & Kyriakides, 2012).

Another important element of SSE that is taken into account in designing improvement strategies has to do with its participatory character. SSE promotes the idea that all school stakeholders should be involved in the evaluation of their school. Thereby, as soon as the schools attempt to design an improvement project, stakeholders should be brought together and each given a role to play in the project. The readers are reminded that the dynamic model refers to partnership as a school factor. Effective schools are expected to improve this important aspect of the school learning environment. For this reason, DASI refers to the importance of conducting SSE rather than any other form of internal evaluation which might be the initiative of only a specific group of school stakeholders (e.g., school evaluation conducted by the school management team).

The DASI also supports that the A&RTeam has a very crucial role to play in helping schools design SSE, analyze data emerged from SSE, identify priorities for improvement and develop their strategies and action plans for school improvement. They are therefore expected to take an active role in providing their knowledge and expertise to school stakeholders at all stages of DASI. For example, school stakeholders may like to develop their policy on teaching and especially its aspect concerned with the provision of learning opportunities, by organizing activities that promote creativity. In such case, members of the A&RTeam are expected not only to provide suggestions based on research evidence on creativity but may also have to help schools either develop their own instruments to measure creativity or help the stakeholders to use relevant tests that have good psychometric properties and were used in several studies (e.g., Clapham, 1998; Kim, 2006). However, in some

countries, schools are expected to carry out SSE but no emphasis is placed on establishing close relations between the A&RTeam and school stakeholders. For example, schools may simply invite an external research team or a research centre to conduct school evaluation and this team may visit the school in order to collect and analyse data and give a report to schools without working closely with them. Studies on the use of SSE in countries such as Scotland and the Netherlands show that in many schools this approach is followed (Visscher & Coe, 2002). In such schools, teachers, students and parents may not even be aware that a SSE took place. As a consequence, no impact of establishing SSE on student learning is reported (Coe, 2009; Hofman, Dijkstra, & Hofman, 2009). DASI takes a different position on the contribution of A&RTeam and school stakeholders in conducting SSE and using it for improvement purposes. It is expected that the A&RTeam and school stakeholders should actively be involved and work together at all stages of SSE. In this way, we can establish closer links of research with improvement of practice and draw on experiences of both researchers and practitioners in identifying priorities for improvement and designing improvement strategies and action plans. Although the A&RTeam may have technical expertise and may have to conduct the analysis of evaluation data, school stakeholders should have a say for this process too. For example, the A&RTeam may analyse the results and produce a report to school stakeholders (that should be written in a way that even young students can understand). In addition, anyone may ask from members of the A&RTeam to run extra analysis and give them answers to questions that may be of interest to them.

It is finally important to note that one of the major assumptions of SSE is that “human beings can learn from their experiences” (see Kyriakides & Campbell, 2004). This implies that SSE encourages school stakeholders to reflect on their practice and identify their weaknesses. In this way, targets can be set up in order to contribute to student learning. DASI takes into account this value assumption of SSE but it also moves a step forward and reminds that reflection is important but not enough to take improvement initiatives. School stakeholders need support from A&RTeam to reflect on their practice and identify ways to improve their functioning in the school. For example, in the European study investigating the use of DASI to face and reduce bullying mentioned in Chapter 3, it was found that school stakeholders in schools which made use of DASI to deal with bullying, did not have simply to reflect on their experiences and develop their strategies and action plans. Without the support of A&RTeam, it is likely that they may not have seen any problem with their functioning in the school in the first place. It was in fact the SSE conducted by the A&RTeam that revealed that bullying incidents occurred during school breaks. In addition, some schools did not have any policy on how to deal with bystanders and unless A&RTeam raised this issue, school stakeholders might not have had to pay attention to it. In this context, the involvement of school stakeholders in SSE is not only expected to encourage them to reflect about their practice but to reflect by having in mind the literature which refers to best practices to deal with bullying or any other challenge that their school is facing. At this point, school stakeholders are expected to make use of the dynamic model and the

A&RTeam to reflect on the functioning of their school factors that promote learning and learning outcomes.

What Steps do Schools have to Follow in Using the DASI to Improve their Effectiveness?

Dealing with different views of school stakeholders about the main aim of school improvement

The first step of the DASI presented in Chapter 3 concerns the establishment of consensus regarding the main aim of the school improvement project. The fact that people may have different perceptions about change is taken into account and the importance of establishing consensus is explained. For this reason, it is acknowledged that establishing consensus about school improvement aims is not an easy task. However the stand point of DASI is that school stakeholders have to understand that learning is the main function of school and for this reason the ultimate aim of any school improvement project should be to promote learning and learning outcomes. It is vital that the A&RTeam and the management team of the school share this basic assumption of the DASI and discuss it with the various school stakeholders (teachers, parents, students). They may find groups of school stakeholders that may not consider learning as the main task of school. If so, it is the task of school leaders and the A&RTeam to emphasise the important contribution that schools have on student learning.

At this point, it is important not to expect all stakeholders to agree or to spend time and energy in implementing the school improvement project. What is most important is to clarify the aims of the school improvement project to all stakeholders and to ensure that everybody feels welcome in joining the project. In this way, the schools can make use of teachers/parents/students who agree to the assumption that learning is important and would like to be involved in the project. Although we do not expect that everybody will be involved in the project, at the same time we hope to gradually persuade those who may be more sceptical to become more involved. This is especially true with schools that attempt to improve the school policy on partnership, as not as many parents tend to share this value assumption, but this is not an indication that it is not worthy to take actions and improve partnership policy. Obviously, schools should not expect a rush of parents to be interested in the project from the beginning. However they should expect a reasonable increase in the number of parents as the project progresses.

Presenting the theoretical framework of DASI and defining the agenda of SSE

The second step regards the presentation of the theoretical framework of DASI. The framework is expected to help school stakeholders understand that school improvement initiatives should be concerned with school factors included in the dynamic model. The A&RTeam has to present the framework of the DASI to those involved in school improvement process in a simple way. For example, the importance of the assumption of maximising the use of teaching time can easily be understood by everybody (students, parents and teachers). However, sometimes we forget the

importance of this very obvious factor which affects learning and may reduce available teaching time. For example, some parents and students may not give sufficient attention to the importance of coming to school on time and may disturb the teaching process by coming late and interrupting the lesson. Similarly, some school managers may interrupt teaching to make announcements. By providing these simple examples, the A&RTeam may help school stakeholders understand why the policy on maximising teaching time should be in place and why actions should be taken in order to explain to everyone what is expected from them to do.

At this point, we would like to give an example of how a school has dealt with those who did not respect the policy of time management. In a primary school that was situated in a remote area that takes students from different small villages, the headteacher found out that one of the bus drivers was always late in the morning. She explained to the bus driver why it is important to be on time to school. The bus driver told her that one of the students was coming to the bus stop late and he had to wait for him. The headteacher asked the bus driver not to wait for the student and to come on time to school every day. The next day the mother of the student came to the school complaining that the bus driver had left her son. The head teacher explained to her that because teaching time should be guaranteed, she asked the bus driver to be more punctual. It was also explained to her that unless her son arrived at the bus stop on time every day, she would have to find an alternate method of transportation for her son. In another school, the teacher had to argue with a mother to bring her daughter on time to school and not half hour late. The mother refused to do it and had the impression that her daughter could catch up easily and there was no reason to bring her on time. The headteacher also had to talk with the mother but with no result. In this case, you can see that some stakeholders may not understand the importance of even the most obvious factors that affect learning such as the quantity of teaching time. Although the school did not manage to persuade the mother to respect the school policy, in a year time her daughter's results in the subject taught in the first period worsened. Thus, the teacher showed the mother her daughter's results in the tests to persuade her to pay more attention to coming to school on time. These two examples show us that not all school stakeholders may understand the importance of school factors for various reasons. In the first case, the bus driver and the mother were not aware of the importance of the factor of maximizing the use of teaching time. Consequently, the headteacher helped them understand what is expected from them. In the second case, the mother underestimated the importance of teaching time and had the impression that when students are clever they don't need teachers and time for learning. Given that school stakeholders may have different views (which may not be valid) about the factors affecting learning, the DASI puts emphasis on the use of a valid theoretical framework in defining the content of SSE. The importance of communicating this framework to all stakeholders is also stressed and it is expected that teachers, parents and students understand why it is important for the school to improve the functioning of these factors.

Development and administration of evaluation instruments

The next step is concerned with the development and administration of instruments in order to measure the factors of the dynamic model and with the analysis of data in order to identify priorities for improvement. At this step, it is first of all important that the school management team and the A&RTeam inform stakeholders about the instruments that are used and explain that the analysis of data is concerned with the identification of general trends that exist in the school and not with exposing individuals who may perform less well than others. They should also make sure that anonymity and confidentiality of the data they are handling is guaranteed. It is for this reason that stakeholders should give special attention to the process that is used for the administration of the instruments. For example, administering teacher questionnaire in order to measure school factors implies that each teacher should give his/her answers individually and not in cooperation with other teachers. In addition, the members of A&RTeam should not collect the questionnaires from each teacher individually but give them the chance to complete the questionnaire in their own time and return the completed questionnaire to a box so nobody can have access to their responses. It is also very important that the school management team and A&RTeam explain to school stakeholders participating in the initial evaluation, to express themselves in a clear and honest way. Moreover, they should be aware that the results of school self evaluation should reveal some priorities for improvement but this does not mean that school stakeholders responsible for this areas should consider themselves as less competent than others, since SSE is expected to support the improvement of the school rather than to blame individuals.

Related to the anonymity issue, it is important that school stakeholders and the A&RTeam to be careful with raising questions on background characteristics of teachers and other stakeholders which may help someone to identify who answered the questionnaire. Although questions on background characteristics are useful for testing the generalizability of the data and for identifying differences in the responses of different groups of stakeholders, the school management team and the A&RTeam should be extremely careful in including them in groups which are relatively small.

Another issue that has to be discussed concerns the assumption of the “commitment to gathering evidence” (see Kyriakides & Campbell, 2004). School stakeholders are expected to express commitment to objectivity and readiness to alter their practice in the light of evidence (Fitz-Gibbon, Tymms, & Hazlewood, 1990; Visscher & Coe, 2002). It is important to acknowledge that each member of the school may have his/her own views on what the priorities for improvement are. However, after the results of the SSE have identified a priority area for improvement all stakeholders are expected to show a willingness to work on this area. In some schools which make use of SSE to identify improvement efforts, the A&RTeam may find members of the school that are opposing the results of SSE because they still believe that another area needs to be treated as priority for school improvement rather than those areas identified through analysing the results of the SSE. To avoid this

kind of problem, at the very first stage of DASI an agreement that everybody has to respect the results of evaluation should be reached.

Measuring different types of learning outcomes

Since at step A, it was agreed that the ultimate aim of DASI is the improvement of learning and learning outcomes, at this point school stakeholders should take a decision on the learning outcomes that will be measured. In choosing the type of learning outcomes that the school will measure, several considerations can be taken into account. Schools may take into account practicality issues such as the availability of a battery of test that can be administered to different age groups of students and/or the time that is needed for collecting and marking the tests. Moreover, the decision may have to do with the interests of school stakeholders in finding out student performance in specific areas, such as social cognition and creativity. At this point, the A&RTeam may encourage stakeholders to measure more than one learning outcome. In this way, the results of summative evaluation will help school stakeholders see that the DASI had an impact on more than one learning outcome. In addition, it might help schools give answers to those that are afraid that focusing on one learning outcome may negatively affect other outcomes. For example, some parents may be under the impression that if achievement in social science is measured then student achievement in another subject (e.g., mathematics) may be negatively affected due to the fact that teachers will not pay enough attention to this outcome. In such case, measuring more than one type of learning outcomes can help school stakeholders understand that the DASI is about the improvement of school factors that affect all types of learning outcomes.

Establishing rules for the use of data

Finally, rules for the use of data should be established to ensure confidentiality of the data. Much of the data collected through SSE is personal information. For example, it may relate to individual teacher performance or to parental support. For this reason, it is essential for the A&RTeam to establish procedures to control the use of data and to agree with the stakeholders on the purpose for which data are being collected (Fitz-Gibbon & Tymms, 2002). For instance, school stakeholders and the A&RTeam may inform parents that collecting data on quality of teaching does not serve checking upon or supervising teachers' work. At the same time, the A&RTeam should ensure teachers that SSE aims at outlining general tendencies in the school and is not directed at measuring the effectiveness of individual teachers. Thus, the main focus of SSE is to help the improvement of the organization rather than identifying the performance of individuals. This implies that the data collected should be focused on how to influence decision making about the priorities of school improvement and on how to develop strategies and action plans for school improvement.

The establishment of rules on using data has important implications on how data will be analysed. Since the main aim of the DASI is to identify priorities for improvement, the analysis of

data should help us rank order the functioning of factors and identify those that need more attention. Another problem that may arise in analyzing data has to do with the initial measure of student achievement in different learning outcomes. Some stakeholders may be interested to find out how students of different classrooms within their school managed to perform in the tests. To avoid this problem, the A&RTeam should make clear that for the purposes of school improvement, such questions damage the formative function of SSE.

Presenting the results of SSE and identifying priorities for improvement

Beyond collecting and analyzing the data, the A&RTeam should present the results of the analysis of data to school stakeholders, in a meeting showing the list of areas that could be addressed. In this meeting, stakeholders are encouraged to express their views about this list. Initially, school stakeholders may indicate whether they found these results to be what they expected. By asking school stakeholders to share their expectations with the A&RTeam may also help schools to investigate the external validity of the initial evaluation. In addition, school stakeholders may express their first ideas of how they could contribute to improving the functioning of the school factors. For example, in a school where the policy on assessment was identified as an important priority area for improvement, teachers may first try to search for reasons for which parents do not visit schools. This may shed light on children's performances and what the stakeholders can do in order to report more effective results in the assessment. For example, they could ask themselves how easy it is for parents who are working to come and visit schools at the time allocated in the program for parents' visit and what kind of changes are needed in order to facilitate the communication with parents. Similarly, parents may have to ask themselves how to establish better communication with teachers in order to learn from them how to support their children's learning rather than to simply negotiate their children's grades. In this way, a focused reflection is encouraged and some initial thoughts about the action plans are exchanged. It is finally very important at this stage to reach consensus among school stakeholders on the area(s) that need to be addressed. At this point, the readers are reminded that the dynamic model assumes that factors operating at the same time are often related to each other. It is therefore possible for school stakeholders to combine areas for improvement from the list presented to them. In addition, at this stage, teachers are also expected to share the results of the assessment with students and their parents. During this discussion, the aim is to work together in order to make plans on how the student can achieve specific learning objectives with the support of his/her parents and teacher.

Since not every stakeholder will be able to participate at the meeting where the results of evaluation are presented, it is the responsibility of the school management team (with support from the A&RTeam) to inform all stakeholders that were not present at the meeting, of the results of the evaluation and the decision taken at the meeting. In addition, the stakeholders that were not present at

the meeting are also requested to express their views about the results in a written form. In this way, the school has the chance to define the area(s) of the school improvement project more precisely and to announce the final decision in a formal way (e.g. by sending a letter to all stakeholders).

At step D of the DASI schools are expected to develop their action plans. The A&RTeam should first of all help school stakeholders to understand the elements that need to be included in an action plan. In developing the action plans, all schools must specify which tasks need to be undertaken, who is going to be responsible for implementing each task, when each task is expected to be implemented, and what resources should be provided to the stakeholders in order to implement these tasks. The A&RTeam should also give specific suggestions on the type of actions that the schools can take in order to improve the functioning of factors associated with the improvement area(s) of the school.

Beyond developing action plans, formative evaluation mechanisms should also be established (see step E of DASI). The results of formative evaluation will help schools to redefine their action plans on time and provide the support that some stakeholders many need in order to implement these action plans. For example, the coordinator of the improvement project and/or other stakeholders involved in implementing specific action plans may be encouraged to keep a reflective diary which will inform the A&RTeam and school stakeholders about the implementation of the action plans and the problems that may arise. Obviously, it is not necessary for the coordinator to put down their every day progress. However they should mention the events that were very crucial to the success of the project (e.g., problems that turn up, difficulties, achievements, remarks, hesitations). Coordinators can share these events with the A&RTeam who is expected to help school stakeholders in their attempts to redefine their strategies and actions to make them more relevant to their context as the improvement process progresses.

While the A&RTeam will be monitoring the implementation of the improvement project, it is very likely that school stakeholders will identify practical difficulties and weaknesses in their action plans. It is essential that *immediate actions are taken to improve and redefine* the action plans in order to achieve their goals. Schools may discover that in some cases they may have to make changes in their plans many times during a school year. This does not necessarily imply that the original action plans were insufficient but merely that they are not fit for long time periods. On the contrary, the A&RTeam should be surprised to experience that the initial action plan developed can remain the same over a long period of time. If this is the case, it might be an indication that the monitoring system is not providing valid data. For example, the monitoring team may be trying to please the school management team by indicating that all the actions are implemented sufficiently and major progress is being made.

In the second section of this chapter the main steps that schools have to follow in order to implement the DASI are described. Some issues that need to be taken into account by the school stakeholders and the A&RTeam in their attempt to undertake specific activities associated with each

step are raised. In the final part of this chapter, we provide suggestions on the design of improvement strategies and action plans and refer to tasks that could be undertaken in order to improve the functioning of each school factor.

The Design of Actions and Strategies for Improvement

In the final section of this chapter, we refer to the actions that school stakeholders and the A&R Team can take, in order to design their improvement strategies and action plans. It is first of all stressed that when developing their school policy and action plans, stakeholders should bear in mind how and why each aspect of the overarching school factor addressed (i.e. the policy on teaching, the policy on the learning environment, and school evaluation) is related to learning and the learning outcomes. The policy should also outline the *roles, responsibilities and procedures* for staff and other adults, including parents and community volunteers who will be involved in DASI and the specific school improvement project. When developing school policy and designing action plans and strategies, it is also very useful for school stakeholders and the A&R Team to take into account the following:

A) The term ‘school policy’ does not refer only to the various formal documents or letters sent to different school stakeholders which explain the policy of the school, but also to the various actions that the school management team (teachers, deputy heads, and administrator) undertake, to improve the quality of teaching and the school learning environment. It is further important for the format of the policy to be clear, especially in the messages that are delivered to the teachers and other stakeholders. This is because they provide specific direction for the role that each individual involved has to undertake, in regard to the implementation of the various aspects of school policy.

B) During the designing of action plans, it is advised that school stakeholders and the A&R Team take into account the abilities and skills of teachers, students and parents in implementing the intervention policy. For example, encouraging teachers to visit each other’s classrooms to observe specific teaching skills, may not be an appropriate decision to make if a climate of openness among teachers has not yet been established at the school. On the other hand, more approachable actions and strategies, such as staff meeting presentations of the successful approaches teachers may use, could have a positive impact on the effectiveness of the intervention. Equally they should ensure that the stakeholders are willing to be involved in implementing the policy, and that the school is further able to provide them with the support (not only financial) needed to implement the policy.

In this section, readers can find suggestions for specific actions and strategies that they could include in their own school policy design, both for teaching and the school learning environment. The strategies and action plans that are provided can be modified according to the readers’ specific needs, yet they should remain in line with the skills of the various stakeholders of the school. The recommendations presented below may assist readers to make decisions for the effective development of a school improvement project.

A) Overarching factor 1: School policy for teaching

In this part, suggestions regarding the three aspects of the first overarching factor can be found, which are concerned with school policy on teaching and the actions taken to improve teaching (see Chapter 2). The three aspects of this domain concern: a) *quantity of teaching*, b) *provision of learning opportunities*, and c) *quality of teaching*.

A.1) Quantity of teaching

This factor refers to the ability of the school to face problems that may reduce teaching time. Two types of reactions are presented: the first regarding methods of persuading school stakeholders to avoid reducing teaching time (i.e. kind of disciplinary actions) and the second identifying techniques for regaining lost teaching time (or in part), by offering extra time for learning.

a) Absenteeism of Students

Student absenteeism is an aspect of this factor that has direct and negative consequences to the quantity of teaching offered to students. Some actions for reducing this phenomenon and for replacing the lost time are given below.

Actions for reducing the phenomenon: Firstly, teachers should keep records of student absenteeism on a daily basis and if possible, selected school stakeholders could be responsible for analysing them, by searching for general trends of which students are missing lessons and when this is occurring. Although schools usually keep record of student absenteeism, this is typically only for managerial purposes. Schools may also choose to present the results and send a short report to parents, which may display when the phenomenon is occurring, or on which days the students are usually absent. This report could also be publicised on the notice board. The analysis of data can also help school stakeholders to set targets that will be announced to all stakeholders, in order to reduce the phenomenon. Moreover, if the figures show that a greater number of students were absent on specific day(s), the school management team may investigate the reasoning for this by discussing such findings with the absent students. For example, if mass absenteeism occurs on the same day as an organised school trip, the reasoning for the students' lack of attendance could simply be that they did not want to participate in the event. Similarly, if a relatively high percentage of students are recurrently missing on a Friday, it may be due to particular families purposefully extending their weekends. In such cases, there would be a need to contact these parents to request that teaching time is respected.

Secondly, schools should announce their policy on student absenteeism to parents and students, clarifying that there should be a serious explanation for students that are not attending school (Ma, 1999). In addition, it can be reiterated to students and parents who missed lessons or a school day for an acceptable reason (e.g. illness, participating in competitions, representing the school in events), that they should provide supporting documents detailing the reason for their absence. These

documents should be given promptly to the school staff members responsible for dealing with absenteeism and checked if necessary. On the other hand, those students who missed lessons or school days without acceptable reasoning should be addressed individually and measures should be taken to avoid absenteeism in the future.

Regaining the lost teaching time: In some schools, each student is expected to nominate or have classmates whose responsibility it is to inform him/her of what happened during the day and of any homework that was assigned whilst he/she was absent. In this way, the student will have the opportunity to work on the topic at home and the parents (or other members of the family) may help him/her to catch up with the lost time. In other schools, it may be the teachers that are expected to find extra time to inform and assist students in catching up with the part of the curriculum they have missed. This can be either when the student returns to the school or even during the period that they are missing the lesson for, at a place outside of the school (e.g. visit students at hospital to inform them about the lessons that they missed).

b) Teacher Absenteeism

Teacher absenteeism is another important aspect of this factor that may have negative consequences to the quantity of teaching offered to students. Some actions for reducing this phenomenon and for replacing the lost time are given below.

Actions for reducing the phenomenon: The school management team usually keep records for teacher absenteeism and may also analyse the data following a similar approach to the one described in the section concerned with student absenteeism. In some schools, the management team may also present the results of the teachers' attendance focussing on general trends that may exist (e.g. specific days or time periods that more teachers are absent), yet without exposing individuals who are absent for longer periods. The analysis of data should help the team to set targets (together with the teachers) on how to reduce the phenomenon. Secondly, the management team should announce the school policy to teachers, clarifying that serious reasoning is required for absenteeism. Similar to the procedure for students, teachers who missed lessons or other school tasks for an acceptable reason (e.g. illness, asked by the school to participate in an in-service training course provided externally) should provide evidence to whoever is responsible for dealing with absenteeism. This is expected promptly and will be checked if necessary. Teachers missing lessons or school days who fail to provide an acceptable reason should be addressed individually and appropriate measures should be taken to avoid further absenteeism (e.g. warnings, negative evaluation, no salary raise). In extreme cases, teachers may be suspended or fired for this reason.

Regaining the lost teaching time: Teachers who know in advance that they will be absent (e.g. have to attend a course offered externally) are required to prepare teaching materials which can be used during their absence by replacement teachers. In cases when absenteeism cannot be predicted (i.e. teacher illness), other available teachers may be asked to cover the lessons affected and the

management team should find a way to compensate those that are providing extra lessons. In those cases that there is no teacher available to run the lesson(s), students may be given the opportunity to undertake extra-curricular activities (e.g. going to the library and studying under the supervision of the librarian, playing educational games, developing a project by using the internet). If no action is taken, then students may lose the teaching time and could even cause problems for other classrooms as well, as misbehaviour is likely to occur especially if being without supervision.

c) Management of teaching time

School policy on the management of teaching time is also an aspect of the factor concerned with quantity of teaching. In defining this policy, the dynamic model refers to several aspects of the management of teaching time, such as ensuring that: a) lessons start on time and finish on time; b) there are no interruptions of lessons for staff meetings, announcements, or preparation of school events. Resultantly, school stakeholders ensure that the time allocated for teaching is used to achieve the aims of the official curriculum.

Actions for reducing the phenomenon: Schools can take several actions to reduce the interruption of lessons and guarantee that they start and finish on time. For example, schools may have an official policy (which will be announced to all school stakeholders) that lessons will not be interrupted by anyone (e.g. other teachers, deputy heads or heads) or for any managerial reason (e.g. for making an announcement or collecting money for school trips/charity reasons etc). The starting and finishing times of the lessons can also be announced to the teachers, students and parents which the school management team should enforce, by ensuring that students and teachers go to class on time after each school break.

Schools can also consider the possibility of keeping record of students who are not on time to attend the lesson. In some schools these results are announced to various stakeholders and are also communicated with parents (for disciplinary reasons). If students arrive late in the morning, teachers can request that their parents bring them to school on time. Certain schools may enforce punishment for those arriving late in the morning, for example by not allowing them to enter the class, yet stakeholders should be aware that this approach can create more problems, as further teaching time is lost. Similarly, teachers who regularly start lessons late or not finish on time should be addressed individually by the headteacher and appropriate measures should be taken to avoid this phenomenon (e.g. warnings, negative evaluation) in the future.

Regaining the lost teaching time: Students who are late can be asked to spend extra time in school or to do extra homework to compensate for the lost time. Therefore, not only is the lost teaching time regained, but students are also discouraged from arriving late to school. Some schools require late students to stay during their break time to discuss with their teacher how to compensate for the learning tasks they have missed.

d) Policy on Homework

Schools are expected to have a policy on homework and the policy should be announced not only to teachers but also to the parents and students. Policy on homework should cover the following aspects: a) amount of homework given to students; b) type of homework that should be given (i.e. giving application tasks and tasks that students are able to undertake without additional support by any adult); c) the role of parents in supervising homework (i.e. parents are only expected to check that their children spent time doing the homework and not solve the problems/tasks that their children are supposed to do) and d) teacher evaluation of homework and feedback given to students on the homework assignments.

Some schools could organise special events which will explain to parents how they can supervise and support their children. Schools may also encourage parents to have regular communication with teachers and provide feedback of how their children behave whilst doing homework and the kind of problems their children face with it. It is finally important to note that teachers should keep record of those children who neglect their homework, as students with no acceptable reason for doing so can be addressed individually and appropriate measures can be taken to reduce this problem. Equally, the importance that teachers place on homework should be conveyed to the students and parents alike.

A.2) Provision of learning opportunities

School policy on provision of learning opportunities is measured by focusing on the extent to which the school has a mission concerning the provision of learning opportunities which is reflected in its policy on curriculum. School policy on long-term and short-term planning and on providing support to students with special needs is also examined. Furthermore, the extent to which the school attempts to make good use of school trips and other extra-curricular activities for teaching/learning purposes is investigated.

a) Making good use of school trips and other extra-curricular activities for learning purposes

Regarding this aspect of school policy, it is important to note that some schools may adhere to the notion that school trips are only for fun and not for educational purposes, presenting the impression that learning and fun cannot go together. However, school policy on provision of learning opportunities consists of ensuring that numerous learning opportunities are offered to children both inside and outside of the classroom. For this reason, schools should consider school trips as a very good opportunity to show children that what is learnt in school has significant relevance to everyday life. For example, a school trip to another city could include a visit to a local museum, which would offer the children additional learning opportunities and could provide an integrated approach to teaching history, geography and art.

School stakeholders can therefore be informed that the various events and extracurricular activities that students are involved with are chosen on the basis that they can offer learning opportunities to students without negatively affecting the time that is offered for teaching a specific subject. This implies that the school management team should select their students' activities through specific criteria, which are used whenever a suggestion for a trip or involvement in a project is made. This further suggests that schools will have to offer different extracurricular activities to different groups of students (e.g. Year 1 students are likely to visit a different place than Year 5 students) by taking into account their learning needs. Evaluation of the impact that these activities have on student learning could also be undertaken.

Finally, school stakeholders may realise that the involvement of students in activities that do not provide any learning opportunities have a negative impact on student learning, because teaching time is simultaneously reduced. It is for this reason that the school management team should place a great deal of emphasis on the selection of activities offering learning opportunities to students that cannot be offered through the formal curriculum.

b) School policy on long-term and short-term planning

Some schools expect teachers to provide their short-term plans to head teachers or other school staff members (e.g. deputy heads, subject coordinator). Whilst this can be viewed as a method of ensuring that teachers are accountable for covering the curriculum in the time frame required, there is some scope for improvement. A more efficient technique of short-term planning would be for the head teacher or mentor to provide feedback and support to the teachers. Use of the latter approach will provide teachers with support to organise their time in a more efficient way and ultimately improve the quality of their teaching. Particular schools may also ask groups of teachers to cooperate and prepare their long-term planning together. For example, teachers of a specific subject (in secondary schools) or of a specific age group of students (in primary schools) may be asked to develop their planning for the year at the beginning of the school year, which should be adapted at the end of each term.

Schools may also consider the announcement of the long-term planning to students and/or parents. In this way, the parents are aware of what takes place in the school and may also be encouraged to find ways to support the implementation of the planning, both inside (e.g. by providing resources to teachers) and outside of the school (e.g. by monitoring the homework or offering relevant opportunities in the trips or other events that they are organising as a family).

In some schools, the long-term planning does not only cover the curricular activities, it also refers to the extra-curricular activities which are expected to contribute to the achievement of specific aims of the curriculum. In this way, the long-term planning takes into account that some teaching time may be spent on extra-curricular activities and is thereby an accurate portrayal of what will eventually happen during the school year.

c) School policy on providing support to students with special needs

In some schools, additional time outside of school hours is allocated to children with special needs, including gifted or talented children, to support their learning in different domains (e.g. Art, Music, Physical Education, Mathematics, Language, Science). Schools may also ensure that teachers are available during the school hours to provide support to children with special needs, in order to facilitate and promote their learning in the regular classrooms. Other schools provide relevant support outside of the classroom, yet within school hours (e.g. during school breaks).

Announcement to students and/or parents of the school policy on providing support to students with special needs is essential. Various methods can be employed to announce such policy (e.g. documents including the official policy can be sent to parents, the policy can be made available on the web page of the school). In this way, parents of children with special needs are informed of the opportunities offered to their children, whilst other parents can encourage the positive attitudes of their own children towards their classmates who have special needs.

A.3) Quality of teaching

Policy on quality of teaching mainly refers to the eight teacher factors included in the dynamic model (see Chapter 2). When developing school policy to improve teaching, one should pay close attention to each of these eight factors, because they have been found to be associated with student achievement gains. For example, if a teacher has not developed his/hers time management skills or does not handle misbehaviour and disorder effectively, then he/she will face disciplinary problems in the classroom and teaching time will resultantly be reduced. In contrast, if the teacher creates a businesslike and supportive environment for learning, misbehaviour may become a rare occurrence and teaching aims are more likely to be achieved. Therefore, effective schools are those which develop clear, specific and concrete policy on the quality of teaching, whilst encouraging teachers to create the appropriate positive conditions for learning and instruction in the classroom. Below our suggestions are outlined for developing school policy on the quality of teaching, in regard to the eight teacher factors included in the dynamic model.

The school management team should encourage teachers to undertake activities which promote quality in their teaching and therefore improve their teaching practice. Initially, teachers could be informed during staff meetings of the importance of the eight factors and their five dimensions. Subsequently an exchange of teachers' ideas and views could take place, concerning the creation of a classroom climate which is supportive for learning and stimulates positive child behaviour. It could further be determined that certain staff meetings will not only deal with administrative issues, but will also establish policy on the quality of teaching. In such meetings, issues concerned with the quality of teaching should be discussed, including classroom strategies for improving teaching practice, as well as methods of dealing with misbehaviour problems effectively.

Further suggestions are provided below for practices that can be used to create a safe learning environment in the classroom.

Firstly, we recommend that teachers avoid the negative aspects of competition among the students in the classroom, because the losing children may develop a sense of uselessness and a loss of self-esteem, which could extend across a range of valued classroom activities. Such feelings are likely to cause frustration and negative attitudes towards learning.

The head teacher should engage teachers in positive student-student and student-teacher interactions and mobilise them to promote those interactions actively in the classroom. Teachers should assign students cooperative activities where they can work together in small groups to achieve mutual learning goals. Such strategies can contribute to the common good, potentially through the inclusion of migrants, minority students, newcomers and different socio-ethnic groups of children. If teachers need to strengthen the interactions between their students, they should attempt to create cooperative experiences in the classroom. Such experiences can encourage the students' commitment to: a) contributing to the well being of other students, b) accepting responsibility to add to their partners' work, c) displaying respect for the efforts of others, and d) behaving with integrity, compassion and an appreciation for diversity. Teachers should also manage their classroom by focusing on promoting mutual goals that require self-regulation and productive interactions.

Another aspect that the school management team should seriously consider is the lack of direct teaching skills some teachers possess. Such teachers are considered insufficient when observed to lack skills of the direct teaching approach, such as: classroom management skills, application, management of time, structuring of the lesson, monitoring students behaviour, organisation of activities (e.g. preparation, distribution of materials) and discipline. Therefore, the school management team should identify teaching needs for professional development and support them in order to upgrade their skills.

Some schools may also offer common non-teaching time to a group of teachers (e.g. teachers of the same subject or teachers of the same age group of students) and expect each group of teachers to visit other classrooms and provide feedback to help each other to improve his/ her teaching skills.

It is finally important that school policy for the quality of teaching is announced to the teachers (either described in documents or placed on notice boards). The policy may refer to factors related to generic teaching skills and support should also be provided to ensure that each teacher can improve their skills. In the last part of this section, we also refer to actions that can be taken to provide teachers' professional development programmes that are in line with DASI. It is however important to note that these programs can be offered either internally or externally by researchers who are aware of the knowledge-base on effective teaching and the needs that each group of teachers may have (see Antoniou, 2009).

B) Overarching factor 2: School Policy for creating a SLE and actions taken to improve the SLE

In this section, suggestions are provided on the four aspects of the overarching factor included in the theoretical framework of DASI, namely school policy on the school learning environment and actions taken to improve the SLE: a) student behaviour outside the classroom, b) collaboration and interaction between teachers, c) partnership policy and d) provision of learning resources.

B.1) Student behaviour outside of the classroom

With the development of a clear policy on student behaviour outside of the classroom, valuable information about student-student interactions that may promote or hinder learning can be collected and used for the development of action plans. Regarding student behaviour outside of the classroom, all school personnel (not only teachers, but also bus drivers, coaches, and after-school programme supervisors) have to be informed about the school policy and should be trained to implement those aspects that are relevant to their roles. For example, bus drivers should be aware of how to deal with misbehaviour and how to motivate and reinforce positive interactions among students. For instances of misbehaviour, they should also be informed of the appropriate staff members' contact details, or even those of the parents' of misbehaving students. Similarly, after-school programme supervisors may encourage students to make good use of the time that they stay at school, such as spending it on homework. In addition, some students may provide support to others who are facing difficulties with their homework, although supervisors will monitor this support to avoid homework being completed by others or copying to take place without any understanding involved.

For this reason, some specific suggestions on the content of the policy are provided below, which take into account that different activities can be undertaken in the different time periods that students are outside of the classroom (i.e. student behaviour in break time, student behaviour before the lesson starts, student behaviour after school hours/after lessons finish). Also, specific suggestions are provided for the behaviour code that the school should develop, in order to avoid negative and encourage positive interactions among students.

Schools should develop a policy concerning the *effective supervision* of their students during the break sessions. *Increased monitoring* of student behaviour during break times and also before the start of the lessons can help to identify and intervene when bullying and/or other types of misbehaviour occurs. A carefully organised supervision plan can help reduce the bullying phenomenon, especially when focused in the areas of the school where the majority of bullying incidents have been observed.

Although a list of the teachers responsible for supervision is usually determined in most schools, the role of each person involved and the areas each teacher is expected to supervise must also be stated. In regard to the role of teachers, the school management team may recommend that whilst

supervising, the teachers should try to encourage students to interact with each other. They can also conduct informal interviews with students in which questions are open-ended and asked in a neutral way. This should create conditions under which students feel free to openly express their feelings about schooling. In this way, interactions between teachers and students are encouraged and teachers may use the opportunity to provide direct support to learning difficulties that students may face.

Teachers should also be visible and vigilant in such common areas as hallways, stairwells, gym and other hot spots where student misbehaviour may occur. Additional supervision may also be required in school bathrooms, as vandalism, disorder and mess are likely to occur. This can be dealt with by addressing students with specific directions (e.g. throw away any rubbish properly and keep the place tidy). Such tasks can aid students in developing positive attitudes towards the school and encourage desirable behaviour that can be characterised as respectful, reliable and responsible.

Teachers should also be encouraged to look out for any *isolated students* at break times. For example, an isolated student sitting in front of the teachers' office at break time may be attempting to convey a message, which can be interpreted by the supervising teachers if they not only see, but observe and interpret the situation. A possible explanation could be that other students are bullying him/her and in order to obtain some kind of protection, he/she chooses a very visible place considered to be safe and secure, due to the increased teacher supervision there. The next step for the teacher should be to discuss with the isolated child and provide support, yet any conclusions drawn should not be arbitrary, rather they should relate to the discussion and reception of appropriate information. For example, the child in the previous case may merely be sitting outside the office, because he/she resting from a game or prefers to enjoy his/hers meal in silence.

During break time, *playground activities such as playing in cooperative groups* can be organised. These activities may promote learning, for example *table games* can be organised to keep students occupied and entertained during the break time. These games may also demonstrate how the lessons taught at school can be applied to real life situations. Specific directions usually have to be given to students (e.g. include others in the game, follow the rules and return equipment when done). Another example would be the organisation of a *science fair*, which provides an opportunity for students to see and take part in experiments, being educated of science whilst doing so.

Rewarding good behaviour not only in the classroom but outside of it (during break time, and also before and after the lessons start) can be very beneficial. Schools can develop a *motivation system* for the improvement of the social environment of the school, by taking actions to emphasise the maintenance of the behaviour code and the promotion of appropriate and positive behaviours outside the classroom.

Last but not least, the desired behaviour during *school assemblies* has to be defined. This firstly comprises that students follow their line into assembly, with the younger students taking their places first. The time of the school assembly should also be foresighted and arranged to take place in morning hours when the students are not likely to be tired. Also, the school has to limit the time of

assemblies and make their content as brief as possible. If the assembly is expected to take more than 15 minutes, then arrangements should be made for students to be seated: otherwise students are likely to misbehave. If misbehaviour occurs during an assembly, the following consequences could be announced to the students: a) apologise, b) discuss the incident with the teacher, head teacher, and/or parents, c) spend time in the office and/or in another classroom, and d) forfeit break times or other privileges.

B.2) Collaboration and interaction between teachers

Collaboration and interaction between the teachers is particularly important because it can contribute to improving teachers' teaching skills and their every day practice. It therefore has a positive effect on learning outcomes (cognitive and affective). In effective schools, teachers interact on issues associated with learning and teaching, in order to create a business-like environment which can promote students' learning and knowledge. This can subsequently lead to the achievement of cognitive and affective outcomes in education (Creemers & Kyriakides, 2010b).

Some schools are characterised by teacher collaboration only on the level of personal and social interaction, without also involving cooperation on the tasks that are expected to be undertaken. For those schools, it is considered important that teachers have good relations but they do not necessarily expect them to interact on issues associated with their teaching practice. Nevertheless, interaction and collaboration among teachers can only be beneficial if focused on the tasks teachers undertake, which could boost quality in the school learning environment. This active interaction on issues associated with teaching is also needed for teacher professional development purposes.

In order to encourage teacher collaboration, in the development of the timetable, attention is given to provide to groups of teachers common non-contact time that provides opportunities for such interactions. The collaboration may refer to the short or long term planning, the use of specific teaching aids/handouts/materials for delivering an aspect of the curriculum or the design of a common assessment instrument.

Teachers may also be encouraged to exchange visits to each others' classrooms. During such visits, the observation of teaching by using specific observation instruments, in line with the policy on quality of teaching, could be promoted. The results from observing their colleagues can be discussed and help teachers learn from each other.

In addition, some activities such as supervising students during break time can be appointed to not just one teacher but to *pairs of teachers*. By working collaboratively, teachers can discuss what they observe, exchange opinions and workout solutions, presenting to the whole faculty the efforts that they found as more effective. In this way, teachers have access to appropriate *professional development* opportunities that develop and refresh their skills, enabling them to promote learning both inside and outside the classroom.

A very useful strategy in this domain is the development of a *system of mentors* (more experienced teachers). More experienced teachers and/or the head teachers can provide support to younger teachers on how to improve their teaching skills.

B.3) Partnership policy (i.e. the relations of school with community, parents, and advisors)

Involvement of the wider community in school improvement projects is promoted by DASI and can be achieved by establishing a committee that involves the school head teacher, representatives from parent councils, teachers, other school staff, and students. By including staff, students, and parents in the creation and implementation of the improvement project, the school management team receive valuable input from all those that are able to influence learning. Research evidence shows that this factor is one of the most important factors strongly associated with the effectiveness status of the school (Fan & Chen, 2001; Kyriakides et al., 2010; Waterman & Walker, 2009). By establishing good relations with the parents and the school community and encouraging them to be actively involved in the implementation of school policy, we make use of all available human and other learning resources to not only achieve learning aims (cognitive and affective) but also to deal with various challenges that the school will have to face such as the bullying incidents (see Kyriakides, 2005b).

At the beginning of the school year, it is important for the school to *announce* to parents the school policy on teaching and on the SLE, to analyse it and ask them to provide feedback and suggestions. At the initial stages of these efforts, the school has to raise parents' awareness and provide all the information for the action plan. The school community has to *convince* parents that the programme is going to work and that they are able to make a difference. During the implementation of the improvement project, *specific positive feedback* to parents about raising standards helps the school continue its efforts to implement the policy on teaching. Parents also need to be given accurate information on how they can help their children achieve their learning aims (e.g. on how to monitor homework), along with encouragement to contact the school if they are not sure how to support their children.

Usually schools offer some lectures/sessions to parents. In some schools the topics that are covered are not related to the role that parents play in supporting the learning of their children. The school management team must be careful to select appropriate topics and invite lecturers who are aware as to how to give practical suggestions and present their messages in a clear way, appreciating that some parents may have a low educational background.

The school should help parents find roles within the framework of the school's intervention and give credit where due. Parents can also be invited to suggest improvements to the intervention ("What would you like us to do next time?") rather than potential defensive reaction to criticism of the strategies that have already been designed.

School can develop its policy in order to explain to parents *when they can meet* the teachers and be informed about the progress and the behaviour of their children. Where there are regular issues between parents and the school, meeting with parents regularly (not just when there is a crisis) can strengthen working relationships. The school has to assure parents that they can share all of their concerns with their child's teachers. If they do not want to involve the teacher for any reason, they can ask for the *school counsellor* to become involved *or the coordinator*.

Because there is always difficulty in accommodating parents' schedules, a *procedure with details for contacting the appropriate staff members must be developed*. This procedure should refer to convenient ways of contacting the teachers, the school management team or the school coordinator, in order to be informed of the progress that their children make. For example, parents who have set working hours and cannot leave their job and be present at school before the time teachers leave, should be notified that they can contact the school by phone or by email.

The school may also invite parents (and especially those whose child is not making enough progress) to *visit the classrooms of their children* or the school more often and observe teaching in order to find out how to support their children. Meetings at the classroom level help build connections among parents and teachers. In this way, the parents can learn how to support the efforts of the school and what is expected from them so that they may effectively help their child. The teachers may also invite parents to take an *active role*. For example, some schools may invite parents and/or other members of the school community to help teachers organise the teaching of a specific unit for which they have special expertise. For example, a coach of the volleyball team in the school community may be invited to help the PE teacher to teach volleyball to his/her students.

Some schools may invite advisors to provide guidelines for helping them to deal with specific problems (e.g. bullying) or to help them design/implement a research action plan.

Finally, financial support may also be provided to schools. This support can be used for buying teaching materials and other learning resources. This topic is also related with the last aspect of the SLE, concerned with the use of resources and for which some further suggestions are provided below.

B.4) Provision of sufficient learning resources to students and teachers

The availability and especially the good use of learning resources in schools have an effect on student learning (cognitive and affective outcomes) (Hanushek, 1989). For example, a computer with access to the internet as an educational tool in teaching a specific unit may be useful for all students in achieving particular aims. However, if there is only one such computer and there are twenty or more students, fighting may occur. This implies that teachers should organise their classroom learning environment and offer tasks that can be achieved by students using the available resources without any practical difficulties. The above example shows that the provision of learning resources and the

good use of resources by the teachers, prevent misbehaviour in the classroom and on similar occasions in school when whole school projects or extra-curricular activities are undertaken. Below, some general recommendations on the establishment of a policy on the proper use of learning resources are provided.

In order to improve students' learning, schools must develop a policy for the use of visual material and technological equipment in teaching. Teachers should also be strongly encouraged by the school management team to use the available resources in an appropriate way, by taking into account how these resources help students successfully undertake tasks and achieve specific learning aims. A plan must be designed for the fair allocation of the resources between the teachers (and in some cases among students of different age groups). The use of the school library should also be promoted. Records on the use of library and other resources can be kept by the school management team. Analysing the data on the use of resources can also help teachers to set targets on how to maximise the appropriate use of resources for promoting learning.

Schools should also develop a policy on how to identify appropriate teaching aids such as computer software that can be bought by the school to help improve the teaching of specific subjects. Parents and the whole school community can also contribute to the enrichment of teaching aids.

A point to remember in the development of policy on the provision of learning resources is that educational resources include the use of human resources. Some schools may decide to appoint extra personnel for supporting their needs and helping them (e.g. appoint an expert to help teachers dealing with children who have learning difficulties) or encourage parents to visit schools and work with the teacher (see the section on partnership policy).

C) School evaluation

School evaluation is seen as one of the most important factors for improving the effectiveness of schools (Kyriakides et al., 2010; Scheerens et al., 2005). More specifically, effective schools have to develop continuous evaluation mechanisms that measure the effects of their strategies and actions on student learning and use these results (for formative rather than summative reasons) to further improve their actions and strategies on teaching and the school learning environment. In fact, the development of formative evaluation mechanisms at the school level will also help school stakeholders identify priorities for improvement (see Chapter 3). Effective schools are also expected to review the impact of their strategies and actions and identify any errors that occur (see step E of DASI). In this way, they can define new actions and strategies, as well as modify and redesign their action plans for improvement.

The main aim of the school evaluation process is to identify general trends associated with the strengths and weaknesses of the school policy for the learning environment and teaching. In order to collect valid and reliable data on the impact of school policy on improving teaching and the SLE more

than one source of evaluation data is needed. This is because one cannot simply ‘trust’ a single source of data or rely only on the stakeholders’ opinions. The use of systematic observations should also be considered, since using different sources of data enables one to test the internal validity of the school evaluation data (see Creemers & Kyriakides, 2012).

School stakeholders should also decide how many times during the school year they need to collect evaluation data concerning their policy for teaching, the SLE and the actions taken for improving teaching and the SLE. The need to establish continuous formative evaluation mechanisms should be taken into account. These mechanisms are expected to help the school modify its strategies and actions according to the circumstances and specific needs of different groups of the school population.

In addition, the quality of the instruments used to collect data should be evaluated (questionnaires, observation instruments). Special attention should be given to investigating the validity (the extent to which a measurement instrument or a test accurately measures what it is supposed to measure) of these instruments. Obviously, schools are not expected to use advanced statistical techniques to test the construct validity of their instruments, but the use of triangulation (i.e. searching for the extent to which different instruments provide similar data) is recommended.

Moreover, the purposes for which the evaluation data are collected should be explained to all stakeholders. The stakeholders should also be aware that the school evaluation is done for formative and not summative reasons. This implies that evaluation is a natural part of the improvement efforts that the school tries to develop (see Chapter 3). The school management team should guarantee that the school will make use of the information gathered from evaluation, in order to meet their students’ and teachers’ needs and thereby give more emphasis to the formative purpose of evaluation.

Moreover, all participants involved (schools, parents, children) should be informed that confidentiality will be maintained throughout the procedure. To achieve this, the teachers responsible for the school evaluation must use specific software with restricted access, so as to prevent unwanted entry to the data files. Code numbers will also be assigned to students, teachers and schools to ensure confidentiality. Repeated efforts should be made to convince all stakeholders of the confidentiality of the evaluation process and the anonymity of the answers. At the same time, the school management team should make explicit to all stakeholders that in addition to openly criticising the current policy, they should also give suggestions on how school policy can be redefined. In this way, a climate of openness is gradually developed in the school, while each stakeholder is encouraged to be actively involved in the design of strategies and action plans for school improvement.

Main Conclusions Emerging from the Handbook

This handbook provides an overview of a dynamic theory on educational effectiveness which was used to conduct a European study and search for ways of promoting quality in education. Beyond

describing the main assumptions and the factors of the dynamic model, it is argued that the model has received sufficient evidence to support its validity and further development in the direction of improvement. Although the features of the dynamic model are not tested completely, the nature of the model supported by the evidence offers educational policy and practice many ways to use it.

In this handbook, it is also argued that the dynamic model can also help to improve educational practice. Thus, an evidence-based and theory driven approach to teacher and school improvement is recommended (see Chapter 3). The model can contribute in the establishment of such approach since the knowledge in the field about "what works in education and why" is offered. Moreover, the current knowledge base is expanded by the attempt of the dynamic model to refer not only to effectiveness factors but also to their dimensions. This provides educational practice possibilities to improve – directly or even indirectly – teaching and the school learning environment. School self evaluation, using the dynamic model as a tool, can serve as an important instrument to improve the school factors. Furthermore, the dynamic model can also be used for the theory driven evaluation of school improvement. The dynamic model promoting a theory oriented approach to school improvement might also be able to relate effectiveness and improvement because the model is more closely related to educational practice through the dimensions and the non-linear relations included in the theory.

Next to the contribution to the theory and research on educational effectiveness, which is our core focus, we like to argue and we hope that the dynamic model can promote the improvement of education because that is, at the end, the aim we share.

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