

A THEORETICAL BASED APPROACH TO EDUCATIONAL IMPROVEMENT: ESTABLISHING LINKS BETWEEN EDUCATIONAL EFFECTIVENESS RESEARCH AND SCHOOL IMPROVEMENT

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ABSTRACT

This chapter attempts to make a contribution to knowledge and theory building in the field of school improvement in relation to educational effectiveness research. It refers to a dynamic perspective of educational effectiveness and improvement stressing the importance of using an evidence-based and theory-driven approach. Specifically, an approach to school improvement based on the work done in relation to the dynamic model of educational effectiveness is offered. For this reason, an outline of the model is provided and possibilities of using the model for improvement purposes in educational practice are discussed. The recommended approach to school improvement gives also emphasis to quality of teaching and to conditions created at different levels for improving the quality of teaching. Moreover, it is demonstrated that, for improvement purposes, the dynamic model points at the importance of a whole school approach and the use of data collected through school self-evaluation mechanisms for decision making about improvement of policies and actions. Furthermore, the improvement approach related to this model emphasises the use of the available knowledge-base in relation to the main aims of the efforts schools are making to deal with different challenges/problems are facing. Finally, we provide suggestions on conducting experimental and case studies investigating how and under what conditions schools can make use of the dynamic model and develop a theory-driven and evidence-based approach to improvement of the quality of education.

INTRODUCTION

Educational Effectiveness Research (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 research question of EER is which factors in 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. In the last 25 years, EER has improved considerably by the criticism on research design, the sampling and statistical techniques. Methodological advances, particularly the availability of particular software for the analysis of multilevel data, have enabled more efficient estimates of teacher and school differences in student achievement to be obtained (Goldstein, 2003). There is also substantial agreement as to appropriate

methods of estimating school differences/effects and the kinds of data required for valid comparisons to be made. As far as the theoretical component of the field is concerned, progress was made by a more precise definition of the concepts used and the relations between the concepts (e.g., Mortimore et al., 1988; Scheerens, 1992; Levin & Lezotte, 1990). However, there is a shortage of well developed theoretical models from which researchers in the area of educational effectiveness can build theory. The problem is aggravated by infrequent use of existing models (Scheerens & Bosker, 1997).

There are several reasons to argue for the need to develop and test models of effectiveness that could help us explain differences in student learning results by specifying the relationships between the components in the models and student outcomes (Kyriakides, 2005a). First, a model serves to explain previous empirical research parsimoniously. Second, the establishment and testing of models of educational effectiveness may generate a guide to the field to prevent new entrants from re-inventing the wheel by repeating existing research. It also maps a series of avenues for future research, which may help us expand our knowledge base of educational effectiveness. Finally, a model may provide a useful road map for practitioners, and indeed there are hints that it has been partially the absence of educational effectiveness theory that has hindered the uptake of effectiveness knowledge by practitioners in schools (Creemers & Kyriakides, 2006). Therefore, the next step of EER is to establish models that take into account the dynamic character of educational effectiveness and are able to provide support to policy makers and practitioners in their attempt to establish strategies for improving learning outcomes. In this context, the dynamic model of educational effectiveness (Creemers & Kyriakides, 2008a) has recently been developed and a series of studies provided some empirical support to the validity of the model (Kyriakides & Creemers, 2008). The dynamic model is established in a way that helps policy makers and practitioners to improve educational practice by taking rational decisions concerning the optimal fit of the factors within the model and the present situation in the schools or educational systems (see Creemers & Kyriakides, 2006). Therefore, in this chapter, we support the use of a theory-driven and evidence-based approach to school improvement. The essential characteristics of this approach are outlined. Moreover, it is argued that the dynamic model, which is briefly presented below, could contribute in establishing such a

strategy in school improvement. Finally, we provide suggestions for research investigating the extent to which the dynamic model can help teachers and other stakeholders to establish a theory-driven and evidence-based approach to improve the quality of education.

ESTABLISHING LINKS BETWEEN SCHOOL EFFECTIVENESS AND SCHOOL IMPROVEMENT: THE CURRENT SITUATION

Formal education, as it takes place in classrooms, school and other learning environments is the responsibility of practitioners like teachers, principals and other professionals. Policy makers are also responsible for improving learning outcomes especially since they are expected to contribute in setting appropriate aims of education and creating the conditions for teachers and other practitioners to meet them. As a consequence, professionals in education are expected to develop education further and improve its quality. On the other hand, researchers in the area of educational effectiveness are expected to develop and test theories about quality in education. The intention is to establish a theory which can explain variation in outcomes between students. Moreover, the generating knowledge is expected to be used by practitioners and policy makers in their attempt to face challenges in education, to improve the practice in classes and schools, and to develop it further. Although the responsibility for educational practice and the improvement of practice cannot be taken over by educational theory and research, it is a major objective of educational science to contribute to the effectiveness and the improvement of education by providing a knowledge base for practice and helping schools develop effective intervention programmes (Creemers & Kyriakides, 2006). However, the relationship between science and practice in education in general and in educational effectiveness specifically has not been always successful. There are many publications which spell out the problems between theory and practice in education pointing at the differences in approach, the implementation problems and the differences between teachers and schools which should make it almost impossible to use existing “knowledge” in school improvement (e.g., Creemers & Reezigt, 1997; Scheerens & Bosker, 1997; Teddlie & Reynolds, 2000). It is reasonable to expect that there would be a good linkage between EER which aims to develop the knowledge basis about what works in education

and why and the school improvement which aims to improve and develop education in classrooms and schools further. The explicit purpose of the researchers who initiated the research on the effectiveness of classrooms, schools and educational systems was that the results of the research could be used in practice. For example, it has been one of the major aims of the establishment in 1988 of the International Congress of School Effectiveness and Improvement (ICSEI) to bring together researchers, practitioners, and policy makers in a productive cooperation for the benefit of education in general and for the development of the participating “disciplines”.

In recent years, there have been examples of productive co-operation between school effectiveness and school improvement, in which new ways of merging the two traditions/orientations have been attempted (see Creemers & Reezigt, 2005; Gray et al., 1999; MacBeath & Mortimore, 2001; Reynolds & Stoll, 1996; Stoll, Reynolds, Creemers, & Hopkins, 1996; Reynolds, Teddlie, Hopkins, & Stringfield, 2000). However, after two decades one might conclude that the link between EER and school improvement is still problematic. Research on school effectiveness has strongly focused on student outcomes and the characteristics (factors) of classrooms, schools and systems associated with these outcomes without looking at the processes that are needed to change the situation in classes, schools and systems. School improvement, by contrast, was mainly concerned with the process of change in classes and to a larger extent in schools without looking too much at the consequences for student outcomes. In several publications, the reasons for this disappointing situation are analysed in order to provide ways for a more productive cooperation between research and improvement (Creemers & Reezigt, 1997, Reynolds et al, 2000). After a careful analysis of the failure to link research and improvement effectively, strategies for school improvement are developed which attempt to combine the strong elements of research and improvement. Major elements of this combination are the emphasis on the evidence stemming from theory and research, the need to collect multiple data about the achievement of students, the classroom and school processes on one hand and an emphasis on the context of individual schools and thereby the development and implementation of programmes for classes and schools by schools themselves on the other.

In practice, however, there is not much evidence in terms of contribution to student achievement outcomes for such an approach. One problem might be that concentrating on processes at the level of individual schools in many cases almost necessarily implies losing a clear focus on the research evidence. For example, in the ESI (Effective School Improvement) project, which attempted to combine the knowledge base of EER with the knowledge about school improvement, the final framework still reflects the different orientations (Creemers, 2006). One can easily observe that achievement outcomes do not belong to the core of the improvement process which encompasses the improvement of school culture and school process. Similarly, Meijs (2007) conducted a meta-analysis of successful programmes for school improvement and provided support for using a systematic approach to change directed at internal conditions with respect to teaching and learning and to support at the school level aiming to improve the quality of teaching and learning. No evidence for the fact that the content of the improvement programme has to be developed by the school itself has been generated. Therefore, we argue here that there are still serious problems in the relation between effectiveness and improvement. The question persists how to apply the effectiveness knowledge base in practice, in other words, how to get valid and useful information about school improvement out of educational effectiveness (Creemers & Kyriakides, 2006).

Nevertheless, it should be acknowledged that the tensions between the two fields have also led to further clarification about what is at stake. The development of a knowledge base about educational effectiveness certainly needs to be expanded, but it has to be acknowledged that school improvement is more than just application of the available knowledge base. It needs intermediate goals and careful research and evaluation about how the ultimate goals, such as student performance and the characteristics at the school and classroom levels (the so-called effective characteristics), are related to the objectives of the improvement policies. Nevertheless, in the next part of this chapter we will discuss the possibility to effectively use the knowledge base of educational effectiveness and specifically the conceptual framework provided by the dynamic model for improvement purposes. We will also provide suggestions on research concerned with the conditions under which such an approach could result in improving the quality of education.

STRATEGIES FOR SCHOOL IMPROVEMENT

There are many stands of educational and social scientific theory that can be used to explain the process of school improvement arising from curriculum theories (e.g., Campbell, 1985; Fullan, 2001; Simons, 1990; Snyder, Bolin, & Zumwalt, 1992), organisational theories (e.g., Fairman & Quinn, 1985; Mintzberg, 1979), organisation learning theories (Morgan, 1986), and even micro-economic theory and public choice theory, which emphasise incentives and consumer-controlled accountability (Scheerens & Demeuse, 2005). These theories point out the importance of using specific strategies and taking into account specific factors for establishing improvement culture at the school level such as shared vision, autonomy used by schools, staff stability, and ownership. The creation of a climate conducive to improved effectiveness is seen as essential for schools attempting to introduce interventions that will help them become more effective. For school improvement to occur, characteristics of the school culture must be favourable. Schools, for example, must have shared goals and feel responsible for success. Other requirements are collegiality, risk taking, mutual respect and support, openness, and a positive attitude towards lifelong learning. However, research supports the idea that those schools which manage to establish a climate of trust, openness, and collaboration are among the most effective (Freiberg, 1999; Reynolds et al., 2002). It can be claimed that there is something highly tautological in the argument, so that it offers no help in getting from the former state to the latter (Kyriakides & Campbell, 2004).

The dynamic model, which is briefly presented below, acknowledges the importance of the school climate, and for this reason, not only actions taken for improving teaching are treated as factors of effectiveness but also actions taken for improving the School Learning Environment (SLE) are seen as essential characteristics of effective schools (Creemers & Kyriakides, 2008a). It also is assumed that teachers should be considered an essential lever of change, because change is explicit in their classrooms and daily practices. However, for effective school improvement, individual teacher initiatives are not enough. Teachers can succeed in achieving major changes in their classrooms with strong effects on student outcomes, but these intervention programmes are not expected to have a lasting impact on the

school as an organisation. Improvement efforts initiated by one teacher will generally disappear (e.g., when the teacher changes schools), unless the school as an organisation sustains the efforts. This important notion is problematic for educational systems that have no strong tradition of school-level improvement, even when teacher improvement activities may occur (Kyriakides, 2005b). However, it is not supported that all improvement activities necessarily concern all members of a school staff. In practice, this will not happen very often.

At the same time, it is argued here that we should not take as a starting point of an improvement effort the culture of a school but we should try to use the knowledge base of EER in order to identify needs/priorities for improvement. The improvement of school culture might be a welcome effect of an effective improvement effort but at the same time the determined outcomes, in this case the improvement of the factors in the dynamic model, should be achieved. Specifically, the dynamic model gives emphasis to the development of school-based programmes that are aiming to improve the quality of teaching at classroom and school level and aspects of the school learning environment that can contribute directly and/or indirectly to the improvement of teaching practice. For this reason, the next section refers to the importance of using a theory-driven approach in our attempt to improve school effectiveness, and the dynamic model is treated as one of the main theoretical models of educational effectiveness upon which we can draw to build comprehensive school reform programmes. But before we move to the identification of possible implications of the dynamic model for building a theory driven approach in school improvement, we present very briefly the essential characteristics of the dynamic model which reveal some of the main assumptions of the model about the process of improvement.

THE DYNAMIC MODEL OF EDUCATIONAL EFFECTIVENESS: AN OVERVIEW

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 the theoretical models of educational effectiveness which were developed during 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 model has been provided (Kyriakides, 2005a). It also is demonstrated that some characteristics of the comprehensive model can be seen as starting points for the development of the dynamic model of effectiveness which attempts to deal with weaknesses of the previous models.

The main characteristics of the dynamic model are as follows. First, the dynamic model takes into account the fact that effectiveness studies conducted in several countries reveal that the influences on student achievement are multilevel (Teddle & Reynolds, 2000). Therefore, the model is multilevel in nature and refers to factors operating at the four levels shown in figure 1. Figure 1 reveals the main structure of the dynamic model. It is shown that the teaching and learning situation is 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 the policy on creating a learning environment at the school. The final 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 is taken 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.

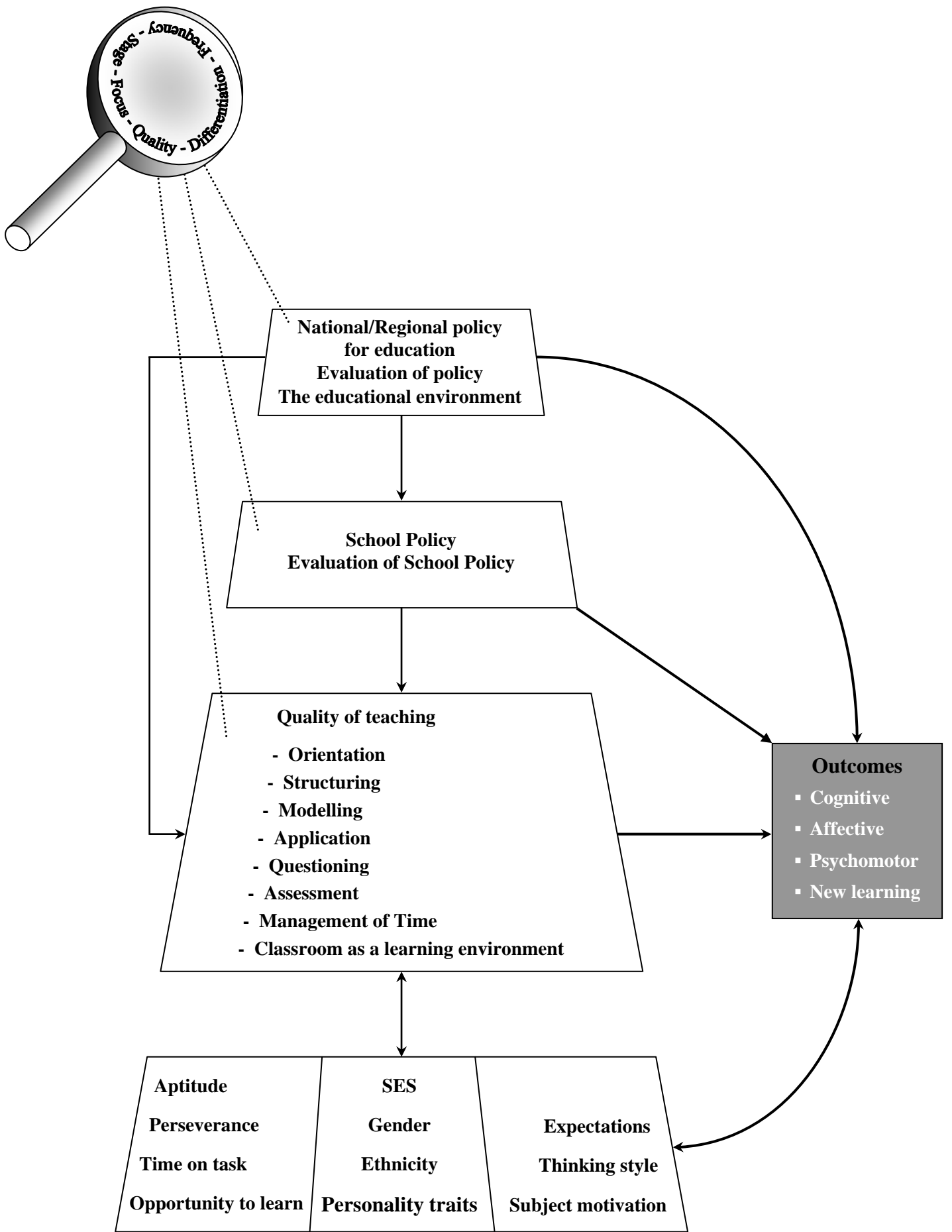


Figure 1: The dynamic model of educational effectiveness

Second, figure 1 not only refers to the four levels of the dynamic model and each level's association with student outcomes, but the *interrelations between the components of the model are also illustrated*. In this way, the model supports that factors at the school and context level have both *direct and indirect effects* on student achievement since they are able to influence not only student achievement but also the teaching and learning situations. This assumption is supported by findings of effectiveness studies conducted in order to test the validity of the comprehensive model (e.g., Kyriakides et al., 2000; de Jong et al., 2004) which reveal that the relationships between factors at different levels might be more complex than assumed in the current integrated models. This is especially true for interaction effects among factors operating at classroom and student level which reveal the importance of investigating differential effectiveness (Campbell et al., 2004). Third, the dynamic model also assumes that the *impact of the school-level factors and the impact of the context-level factors* have 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 the 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 context level factors depends on the current situation of the objects under investigation. This characteristic of the proposed dynamic model does not only reveal an essential difference in the nature of this model with all the current models of educational effectiveness but has also some significant implications for designing studies attempting to use the dynamic model for improvement purposes at the school level (Creemers & Kyriakides, 2008b).

Fourth, the dynamic model is based on the assumption that the relation of some effectiveness factors with achievement may not be linear. This assumption is supported by results of quantitative syntheses investigating the effect of some effectiveness factors upon student achievement which revealed that although these variables have been perceived as factors affecting teacher or school effectiveness, the

research evidence is problematic. For example, teacher subject knowledge is widely perceived as a factor affecting teacher effectiveness (Scriven, 1994), but teachers' subject knowledge, regardless of how it is measured, has rarely correlated strongly with student achievement (Borich, 1992; Darling-Hammond, 2000). The explanation may be, as Monk (1994) reported, that the relationship is curvilinear: A minimal level of knowledge is necessary for teachers to be effective, but beyond a certain point, a negative relation occurs. Similar findings have been reported for the association of self-efficacy beliefs with teacher effectiveness (Schunk 1991; Stevenson, Chen, & Lee, 1993) and for the impact of classroom emotional climate and teacher management upon effectiveness. A negative emotional climate usually shows negative correlations, but a neutral climate is at least as supportive as a warm climate. Beyond an optimal level of teacher direction, drill or recitation becomes dysfunctional (Soar & Soar, 1979). This implies that optimal points for the functioning of factors in relation to student outcomes have to be identified. By doing so, different strategies focusing on the improvement of specific factors for each teacher/school could emerge (Creemers & Kyriakides, 2006). Fifth, the model assumes that there is a need to carefully examine the relationships between the various effectiveness factors which operate at the same level. Such approach to modelling educational effectiveness reveals grouping of factors that make teachers and schools effective. Therefore, specific strategies for improving effectiveness which are more comprehensive in nature are expected to emerge. Finally, the dynamic model is based on the assumption that different dimensions for measuring the functioning of effectiveness factors are used. The use of different measurement dimensions reveals that looking at just the frequency of an effectiveness factor (e.g., the quantity that an activity associated with an effectiveness factor is present in a system/school/classroom) does not help us identify those aspects of the functioning of a factor which are associated to student achievement. Considering effectiveness factors as multidimensional constructs not only provides a better picture of what makes teachers and schools effective but also helps us develop more specific strategies for improving educational practice (Kyriakides & Creemers, 2008).

A THEORY-DRIVEN APPROACH TO SCHOOL IMPROVEMENT: THE CONTRIBUTION OF THE DYNAMIC MODEL

The goal in any science is the production of cumulative knowledge. In the first sections of this chapter, it has been argued that there is little sustained and systematic theoretical development in the area of educational effectiveness. The development of the dynamic model is seen as a reaction to the major weaknesses of the integrated models of educational effectiveness developed during the last decade. Thus, our attempt to establish a better synthesis of empirical evidence concerned with the impact of effectiveness factors upon student achievement is not only expected to generate a guide to the field. It also is expected to provide a useful road map for practitioners, and, indeed, there are hints that it has been partially an absence of educational effectiveness theory that has hindered the take up of effectiveness knowledge by practitioners in schools. The dynamic model is expected to be used in policy and practice for improvement purposes. In the next part of this chapter, it is shown that the dynamic model may contribute to the establishment of a theory-driven approach to school improvement by providing prerequisites for a better use of EER for the improvement of quality in education.

A) Establishing clarity and consensus about the aims of school improvement

The first step of any school improvement effort is based on the assumption that it is important to start with a clear understanding of your destination and how you are going to reach improvement of quality in education. It 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, Fullan (2001) points out that people have different perceptions of change. It is hence difficult to reach consensus among the participants in school reform efforts, albeit crucial in its success. Therefore, it is important to establish procedures to ensure clear understanding among stakeholders as to the aims of school improvement. At this point, the dynamic model can be a useful tool for helping stakeholders realise that the ultimate aim of any school reform effort should be to improve student achievement across the school. Unless learning and learning outcomes are not improved any school improvement effort should

not be considered successful no matter how much it managed to improve any aspect of the climate of the school. This is due to the fact that learning is the mission of the school and emphasis on improving learning outcomes should be given. The dynamic model may also help school stakeholders design improvement programmes at a single school through a School Self Evaluation (SSE) approach or even to 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 model may help them 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. Since the model refers to factors that are changeable and associated with student learning outcomes, the intermediate objectives should address the needs of schools to improve the functioning of specific factors included in the dynamic model.

B) Addressing school factors that are able to influence learning and teaching to improve and/or maintain the quality of schools

Beyond providing support to school stakeholders to design improvement programmes, adopting the dynamic model in order to establish a theory driven approach to school improvement implies that school stakeholders should attempt to build whole school reform efforts which are able to improve the functioning of school level factors included in the model. This is due to the fact that although the dynamic model refers to factors which operate at different levels, school level factors are expected to have both direct and indirect effects on student learning outcomes. As it is mentioned above, school level factors are expected to influence not only student achievement but also the functioning of classroom level factors (see figure 1). Therefore, designing improvement efforts focusing on the classroom level factors may improve the teaching practice of individuals but may not necessarily improve the learning environment of the school. In such case, teachers who may manage to improve aspects of their teaching practice addressed by a specific improvement effort will need, at some stage, some other type of support to improve other teaching skills. But in case that the reform does not aim to improve the learning environment of the

school, such support may not be available when needed and the long lasting effect of a programme aiming to improve teaching practice could be questioned. At the same time, it is acknowledged that school stakeholders should develop interventions/improvement efforts which will not only improve the functioning of the school level factors but ultimately will promote quality of teaching and at the end raise student achievement. Therefore, the dynamic model supports the use of a theory driven approach to school improvement which gives emphasis to improving teaching practice but attempts to do so not only by influencing teaching practice but also by improving the functioning of school level factors. In this way, not only learning opportunities are offered to teachers but also conditions that enable them to continuously improve their teaching practice are provided.

In order to elaborate further on this point, the readers are reminded that the two main overarching school factors are concerned with the teaching practice and the learning environment of the school. Moreover, the model does not only refer to school policy in relation to teaching and the learning environment of the school. Actions taken to improve these two aspects of school policy are seen as characteristics of effective schools. The latter implies that schools can not remain effective unless actions are taken to improve the teaching practice and their learning environment. This is an essential characteristic of the model and is an aspect that reveals its dynamic nature which is attributed to its attempt to consider school effects as a set of ongoing processes where both schools and teachers fall along a set continuum of development (e.g., Kyriakides & Creemers, 2008b; Slater & Teddlie, 1992; Teddlie & Reynolds, 2000). Since schools and their effectiveness status do not remain stable, not only research on school effectiveness but also improvement efforts and evaluation mechanisms should be developed in such a way that relevant changes in their activities will take place continuously. But in order to study change over time, it also is necessary to study teachers and schools longitudinally (i.e., over the course of multiple years). The dynamic model seems to take this need into account, as this is reflected not only in the use of “stage” as a measurement dimension of effectiveness factors but also in its conceptualisation of effectiveness factors at the level of school and at the level of the context of education. More specifically,

the capacity of schools/educational systems to improve their policy of teaching and their policy of the learning environment of the schools is considered as an essential characteristic of an effective school/educational system. Therefore, the assumption that effectiveness is a stable characteristic of a school over time is not justified by the dynamic model. On the contrary, it is claimed that fluctuations or changes in results over time may reflect “real” improvement or a 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 non-changing school policies and teacher practices in a changing context, or by both. Slater and Teddlie (1992) assume that effective schooling is a dynamic, ongoing process. Moreover, the dynamic model assumes that effective schools/educational systems are expected to change in order to remain effective as their contexts change; they must, therefore, adapt their schooling to the changing context. Similarly, ineffective schools may be pushed by the community and local school boards to improve. This idea is consistent with the contingency theory (Donaldson, 2001; Mintzberg, 1979) and can be seen as one of the main assumptions upon which the dynamic model is based. Therefore, the dynamic model reveals that the process of improving effectiveness is 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 actions to remain effective and these actions should have a direct effect on improving teaching and the SLE (Creemers & Kyriakides, 2008b).

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 et al., 2006). In this chapter, we do not only argue for following a theory-driven approach to improve the quality of schools. Emphasis is given to using empirical evidence in order to identify the strengths and weaknesses of a school and design relevant improvement efforts. The importance of using an evidence-based approach to school improvement arises from the fact that the dynamic model treats evaluation of school policy of

teaching and evaluation of the SLE as important overarching factors operating at the school level (Creemers & Kyriakides, 2008a). Therefore, the definition of the factors at the school and classroom level, especially their five measurement dimensions, can be used first for all 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 (Kyriakides & Creemers, 2008) may also be found helpful. Based on the results which will emerge from measuring the functioning of the school and classroom level factors, the strengths and weaknesses of schools will be identified. Moreover, stakeholders may identify priorities for improving the functioning of specific factors and/or grouping of factors. At this point, the 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 at teacher or school level, different teaching profiles, which are associated with student achievement, could be produced, as at least one empirical study has demonstrated (Antoniou, Kyriakides & Creemers, 2008).

Therefore, using the dynamic model to collect data on teacher behaviour in the classroom will reveal the extent to which the classroom behaviour of teachers working in a school is similar to any of these profiles and whether specific changes to their practices are needed in order to develop a more effective profile. For example, they may find out 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 can help students use or develop 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 is not helpful for identifying how you can develop professionally. However, due to the dynamic nature of the model, different priorities for professional development for each teacher may be identified. This is due to the fact that the effects of the improvement of a factor on student outcomes depend on the stage at which each individual teacher is at the moment when measurement occurs (Creemers & Kyriakides, 2008b). Thus, one teacher who attempts to improve his/her orientation skills may result in improving student outcomes more than

attempting to improve his/her skills in teaching modelling. A completely different interpretation can be drawn for another teacher by looking at the situation at which he/she is at the moment. Following this approach, actions taken to improve teaching may follow a more flexible approach and the support provided to teachers may differ in order to meet the professional needs of each teacher or each group of teachers in a school or a network of schools.

School stakeholders who may use the dynamic model in order to collect data on the functioning of the overarching school factor concerned with the SLE may draw similar conclusions. Thus, the priorities of school improvement efforts concerned with either teaching or the SLE have to be related with the current situation of the specific schools and of the teachers involved. We could even provide similar suggestions to policy makers and other external school advisors who are planning to use the dynamic model in order to develop a theory-driven and evidence-based approach in their attempt to improve the quality of education. Specifically, policy makers and other stakeholders are expected to conduct large-scale evaluation studies to collect data concerned with the five dimensions of the factors included in the dynamic model since the data which will emerge will help them design a reform effort that is likely to improve the quality of education. Moreover, since some of the effectiveness factors are expected to have a curvilinear relation with student achievement, the impact of an intervention programme attempting to improve a specific aspect of teaching practice will depend on what the current situation of the objects under consideration (i.e., students, classrooms, schools, system) is. Therefore, data collected through these studies may help policy-makers identify those dimensions that constitute the major weaknesses of the system and therefore design relevant intervention programmes to improve the quality of education.

Finally, the dynamic model assumes that some factors at the same level are related to each other. It is therefore considered important to specify grouping of factors not only at the teacher but also at the school level. This implies that different profiles of schools may also be developed illustrating the needs of the schools across factors related to each other. Although further research attempting not only to test the validity of the model but also to develop the model is needed, the fact that such profiles at teacher level have already been identified (see Antoniou, Kyriakides & Creemers, 2008) implies that the development

of the dynamic model and especially research on using the model for improvement purposes may help school stakeholders establish specific strategies addressing a grouping of factors in their schools.

D) Using the dynamic model to establish a developmental evaluation strategy

The dynamic model may help stakeholders establish a developmental evaluation strategy in their attempt to improve the effectiveness status of their schools. It is important to note that, according to the dynamic model and especially the stage dimension of the evaluation overarching factors, a continuous model of school evaluation is expected to exist in order to allow schools to adopt their policy decisions on the needs of different groups of school stakeholders. Moreover, according to the quality dimension of these factors, emphasis on the interpretive validity of school evaluation systems is given and thereby the extent to which evaluation data help stakeholders improve the policy is examined. It can, therefore, be claimed that the dynamic model supports that a developmental evaluation strategy may contribute to the improvement of the effectiveness status of schools.

For example, a developmental evaluation strategy of school policy and of actions taken for improving the relations of school with parents can be used. In such a case, the evaluation process is expected to follow a linear sequence that starts with the development of a plan for school policy on partnership, from which priorities and targets will emerge with associated performance indicators. At the next stage, evaluation questions that followed from the targets and performance indicators will be established, to provide the criteria for data collection. Then, the data will be analysed and feed back into the formative process of evaluation. In this way, stakeholders will be able to find out what is happening during the implementation of the school policy on partnership.

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 since 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. As a consequence, a logical chain of action that relates aims to targets, to evaluation

questions, and to particular information sources can be established. However, it has to be acknowledged that, although the evaluation process is presented here as linear, it is very likely to be less tidy 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 parts of the policy at different rates (Kyriakides, 2005b). However, the extent to which there is a gap between the implementation of a reform policy and the design of an intervention could be identified. Thus, the results of formative evaluation may help stakeholders take decisions on how to improve the quality of school policy or on how to provide additional support to those working groups that may need it (Kyriakides et al., 2006).

Beyond the fact that the school-level factors included in the dynamic model provide strong support to the use of this strategy to improve effectiveness, the model can also be treated as a tool from which criteria of school effectiveness could arise. Teachers and other stakeholders could be encouraged to draw their own meanings of what makes a school and a teacher effective by considering the knowledge base of educational effectiveness provided by the dynamic model. Such an approach may not only contribute to the professional development of teachers but also to the establishment of criteria of school and teacher effectiveness and the identification of the specific aims of their intervention. Moreover, the proposed measurement framework of effectiveness factors could help stakeholders establish targets and performance indicators and, thereby, specify the developmental process of designing and implementing a reform policy. Research is, however, needed to investigate the impact that the use of the dynamic model may have on improving teaching practice through building a developmental evaluation strategy of any improvement effort of schools.

ESTABLISHING A NETWORK FOR EVIDENCE-BASED AND THEORY-DRIVEN

IMPROVEMENT PROJECTS: USING THE DYNAMIC MODEL TO IMPROVE PRACTICE

During the last four years, studies attempting to develop and test the dynamic model have been conducted (Kyriakides & Creemers, 2008). But since the dynamic model was designed in order not only to reveal the complexity of educational effectiveness but also to establish strong links between EER and improvement

of practice, experimental studies and/or case studies should also be conducted to identify the extent to which schools can make use of the dynamic model for improvement purposes. These studies could also help us identify when and under what conditions schools can make use of the dynamic model and establish a theory-driven and evidence-based approach to their school improvement efforts. The impact of these efforts on both the functioning of effectiveness factors included in the model and on student learning outcomes should also be measured.

In this context, two experimental studies are currently being undertaken in Cyprus investigating the extent to which the model can be used for improvement purposes. The first study is concerned with the use of the dynamic model for establishing school self-evaluation mechanisms (Demetriou, forthcoming). Using group randomisation, three groups of schools have been created and the effects of three different approaches of establishing school-self evaluation mechanisms on student achievement in mathematics are examined. The study will help us identify the extent to which the establishment of self-evaluation mechanisms cannot in itself help schools improve their effectiveness status, but either the schools should make use of the knowledge-base of EER provided by the dynamic model or should first improve their climate and then build effective improvement mechanisms. The second study is concerned with the use of the model for improvement purposes at teacher level. Using the Rasch and the Saltus models to analyse the data emerged from a study testing the validity of the dynamic model at classroom level (Kyriakides & Creemers, 2008), it was found that the teaching skills, associated with the factors of the model, could be grouped into five levels which are discerned in a distinctive way and move gradually from skills associated with direct teaching to skills concerned with new teaching approaches. Teachers situated at higher levels were found to have better student outcomes (Antoniou, Kyriakides & Creemers, 2008). Thus, this study attempts to find out whether providing teachers with training on their skills grouped in these five levels will help them master the skills within their level and move to the next level up.

It should be acknowledged that both experimental and case studies are needed not only to identify the extent to which teachers and schools can make use of the dynamic model for improvement purposes but also to identify the difficulties which they face in their attempt to improve their effectiveness by

making use of the knowledge-base of EER. For this reason, we are establishing a network of professionals who are interested in investigating the possibility of using the model for improvement purposes. One project which is being planned is concerned with the use of the dynamic model in establishing strategies to face and reduce bullying. In the literature, bullying is primarily seen as an external threat to psychological well-being, learning and instruction. In this project, we see bullying not only as an event disturbing learning but as closely related to the learning process. The project aims to help schools in participating countries use an evidence-based and theory-driven approach to face bullying among students of diverse socio-ethnic backgrounds. Schools are encouraged to develop their own strategies and actions by using this approach and taking into account their context and their specific problems/challenges they are facing. More specifically, a framework based on research on bullying and on the dynamic model of educational effectiveness is offered to schools to help them identify what can be achieved and how, in order to deal with and prevent bullying at classroom and school level. In this approach, emphasis is given to using different strategies and actions for students of diverse socio-ethnic background. Schools are also encouraged to identify intermediate objectives that can contribute in the reduction of bullying and on the achievement of not only cognitive but also affective outcomes. Schools are then helped to identify factors of the dynamic model which contribute to explaining and/or facing bullying, particularly from the side of students who express bullying behaviour towards other students. Hence, facing bullying is regarded not only as a challenge for introducing new learning outcomes for schooling but also as a variable that influences the quality of the school and the classroom environment and through that the instructional processes that take place inside and outside the classroom. We also provide training and guidelines to schools and emphasise the role of school self-evaluation as a starting point for developing strategies and actions aiming to face bullying and improve the quality of education. Finally, a meta-evaluation is conducted to find out whether this approach of establishing strategies and actions at school level on bullying is effective. In order to achieve this we measure the impact of different school based strategies on: a) the reduction of bullying, b) the learning environment of the school, c) the achievement of cognitive and affective outcomes of schooling and d) promoting equity. Beyond measuring the impact of each

strategy we also investigate under which conditions at different levels (teacher, school and system), the use of an evidence-based and theory-driven approach to face bullying among students of diverse socio-ethnic backgrounds is effective in relation to the criteria mentioned above. Similar studies could also be conducted by looking at other challenges/problems that schools are nowadays facing such as: a) preventing drop out and improving the learning outcomes, and b) dealing with socio-cultural diversity and promoting equity in schools.

We hope that readers of this chapter may be interested to join this network and undertake their own studies looking not only at the extent to which the dynamic model can be used for improvement purposes but also searching for difficulties/obstacles/problems that should be faced in using the model for school improvement purposes. In this way, the proposed framework of school improvement may be developed and its potential for establishing an evidence-based and theory-driven approach to improvement of practice at classroom and school levels may also be increased. In this way, next to the contribution to the theory and research on educational effectiveness, which is our core business, 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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Establishing links between educational effectiveness research and school improvement: the contribution of the dynamic model. The dynamic approach to school improvement: assumptions and main steps. Main features and assumptions of DASI. Major steps for effective school improvement. Thus, DASI has its own theoretical framework, which refers to factors of educational effectiveness that need to be considered when introducing a change at school level. Specifically, DASI makes use of the dynamic model, which refers to factors found to be associated with student achievement gains not only in empirical studies but also in quantitative syntheses of school and teacher effectiveness studies that have taken place in various countries (see Table 1). Specifically, an approach to school improvement based on the work done in relation to the dynamic model of educational effectiveness is offered. For this reason, an outline of the model is provided and possibilities of using the model for improvement purposes in educational practice are discussed. A strategy in school improvement. Finally, we provide suggestions for research investigating the extent to which the dynamic model can help teachers and other stakeholders to establish a theory-driven and evidence-based approach to improve the quality of education. Establishing links between school effectiveness and school improvement: the current situation.