

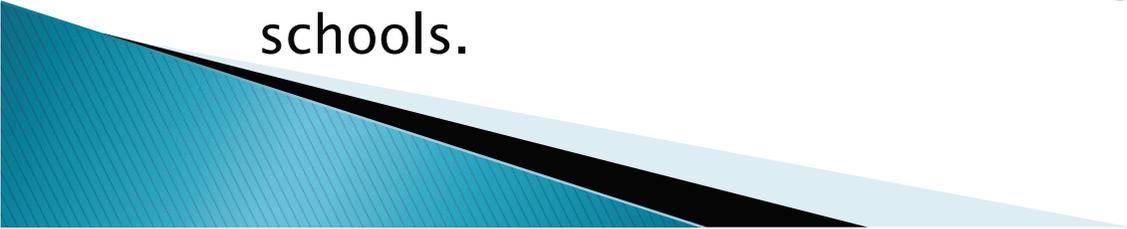
DEVELOPING, TESTING AND USING THEORETICAL MODELS FOR PROMOTING QUALITY AND EQUITY IN EDUCATION

Bert P.M. Creemers

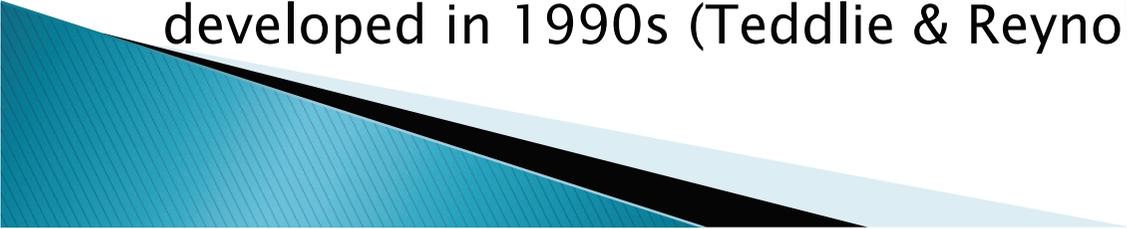
Faculty of Behavioural and Social Sciences,
University of Groningen, the Netherlands

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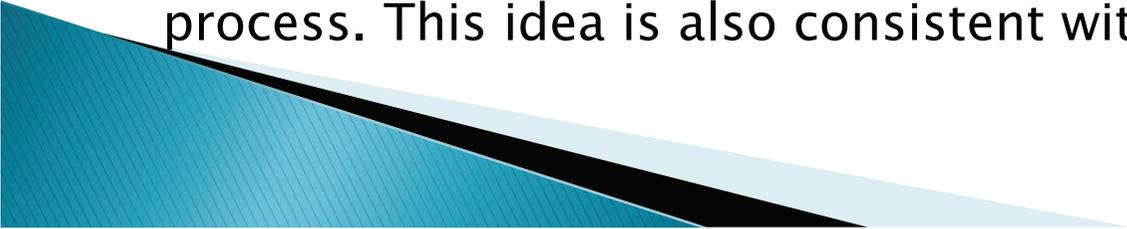
Introduction

- ▶ There are several reasons to argue that there is a need to develop and test models of educational effectiveness:
 1. A model serves to explain previous empirical research parsimoniously.
 2. The establishment and testing of models help us generate a guide to the field. It also maps a series of avenues for future research, which may help us expand our knowledge base of school effectiveness.
 3. A model may provide a useful road map for practitioners, and indeed there are hints that it has been partially an absence of school effectiveness theory that has hindered the take up of effectiveness knowledge by practitioners in schools.
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Introduction

- ▶ Multilevel integrated models of educational effectiveness developed in 1990s: Researchers attempt to integrate the findings of *School Effectiveness Research*, *Teacher Effectiveness Research* and the early *Input-Output Studies*.
 - ▶ The models of this approach (e.g., Creemers, 1994; Scheerens, 1994; Stringfield & Slavin, 1992) had a multilevel structure.
 - ▶ Although these models made use of organisational theories and theories of learning and refer to multiple factors at different levels, each of them is either focused on the classroom or the school level. Depending on this, more emphasis is given either to theories of learning or to organisational theories.
 - ▶ The comprehensive model of educational effectiveness was considered as one of the most influential integrated models developed in 1990s (Teddlie & Reynolds, 2000).
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Introduction

- ▶ Six studies examined the validity of the comprehensive model and provided some empirical support to the model (Kyriakides, 2008).
 - ▶ These studies also revealed that the relationship between factors at different levels might be more complex than assumed in the 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.
 - ▶ A synthesis of these studies has also revealed suggestions for further development of the model especially by taking into account the dynamic nature of educational effectiveness.
 - ▶ *Teaching and learning* are dynamic processes that are constantly adapting to changing needs and opportunities.
 - ▶ Effective schooling should be treated as a dynamic, ongoing process. This idea is also consistent with the contingency theory.
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The dynamic model of educational effectiveness: an overview

A. The rationale of the model

- ▶ The models of Educational Effectiveness Research (EER) should take into account the new goals of education and related to this their implications for teaching and learning.
- ▶ The outcome measures should be defined in a more broad way rather than restricting to the achievement of basic skills.
- ▶ New theories of teaching and learning are used in order to specify variables associated with the quality of teaching.
- ▶ An important constraint of the existing approaches of modelling educational effectiveness is the fact that the whole process does not contribute significantly to the improvement of school effectiveness.
- ▶ 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.



The dynamic model of educational effectiveness: an overview

B. The essential characteristics of the dynamic model

- ▶ The model is multilevel in nature (see Figure 1) and refers to factors operating at four levels.
 - ▶ *Teaching and learning situation* is emphasised and the roles of the two main actors are analysed.
 - ▶ *School-level factors* influence the teaching–learning situation by developing and evaluating the school policy on teaching and the policy on creating the School Learning Environment (SLE).
 - ▶ *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.
 - ▶ *Teaching and learning situation* is influenced by the wider educational context in which students, teachers, and schools are expected to operate.
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The dynamic model of educational effectiveness: an overview

B. The essential characteristics of the dynamic model (continue)

- ▶ 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.
- ▶ Factors at the school and system level have both *direct* and *indirect* effects on student achievement.
- ▶ The impact of the school- and system- level factors is 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 dynamic model of educational effectiveness: an overview

B. The essential characteristics of the dynamic model (continue)

- ▶ Schools and educational systems which are able to identify their weaknesses and develop a policy on aspects associated with teaching and their SLE, are also able to improve their effectiveness status.
- ▶ 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 may reveal grouping of factors.
- ▶ Different dimensions for measuring the functioning of effectiveness factors are used.
- ▶ Each factor is defined and measured using five dimensions: *frequency, focus, stage, quality, and differentiation.*



The dynamic model of educational effectiveness: an overview

B. The essential characteristics of the dynamic model (continue)

- ▶ *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.
- ▶ 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).
- ▶ Two aspects of the *focus* dimension are taken into account. The first one refers to the *specificity* of the activities associated with the functioning of the factor whereas the second one to the *number of purposes* for which an activity takes place.
- ▶ The focus of an activity may be related in a nonlinear way with student achievement.



The dynamic model of educational effectiveness: an overview

B. The essential characteristics of the dynamic model (continue)

- ▶ The *stage* at which tasks associated with a factor take place is examined. 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.
 - ▶ The *quality* refers to the properties of the specific factor itself, as these are discussed in the literature.
 - ▶ *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.
 - ▶ Adaptation to specific needs of each subject or group of subjects will increase the successful implementation of a factor and will ultimately maximize its effect on student learning outcomes.
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Testing the validity of the dynamic model

- ▶ Some supportive material for the validity of the dynamic model has been provided through five studies and two meta-analyses (see Table 1).



Table 1. Empirical evidence supporting the main assumptions of the dynamic model emerged from empirical studies and meta-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	1
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

***Table 1.* Empirical evidence supporting the main assumptions of the dynamic model emerged from empirical studies and meta-analyses**

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 148 studies searching for the impact of generic teaching skills on student achievement (Kyriakides & Chirstoforou, 2011)
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Establishing links between educational effectiveness research and school improvement: The contribution of the dynamic model

- ▶ The dynamic model of educational effectiveness may contribute in establishing a *theory-driven and evidence-based approach* to school improvement (Creemers & Kyriakides, 2012).
 - ▶ A distinctive feature of the dynamic model is that it does not only refer to factors that are important for explaining variation in student achievement but it also attempts to explain why these factors are important by integrating different theoretical orientations to effectiveness.
 - ▶ Teachers may become aware of both the empirical support for the factors involved in their projects and the way these factors operate within a conceptual framework.
 - ▶ Teachers are offered the opportunity to use in a flexible way this knowledge-base, adapt it to their specific needs, and develop their own strategies for school improvement.
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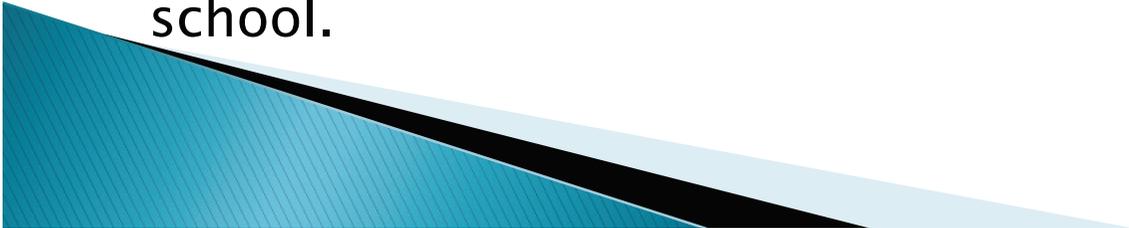
Establishing links between educational effectiveness research and school improvement: The contribution of the dynamic model

- ▶ The model represents the complexity of educational effectiveness but at the same time this representation in factors and dimensions of factors provides opportunities to address improvement of education in a flexible way.
 - This flexibility is promoted by treating differentiation as a dimension of measuring the functioning of each factor.
- ▶ The model points at the possibility of defining *grouping of factors*. This implies that comprehensive strategies with synergetic effects may be developed in order to address the improvement needs of each school.



The dynamic approach to school improvement

A. Main features

- ▶ The Dynamic Approach to School Improvement (DASI) promotes the design of school improvement projects that are based on a theory which has been tested.
 - ▶ The DASI has its own theoretical framework which refers to school factors that need to be considered in introducing a change.
 - ▶ School stakeholders are those who take decisions on which improvement actions and tasks should be carried out.
 - ▶ The *Advisory and Research Team (A&RTeam)* is expected to share its expertise and knowledge with practitioners and help them develop strategies and action plans that are in line with the knowledge-base of EER.
 - ▶ DASI emphasizes the role of school evaluation (especially its formative function) in improving the effectiveness status of the school.
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The dynamic approach to school improvement

B. Main Steps (see also Figure 2)

1. Establishing clarity and consensus about the general aims of school improvement: considering student learning as the main function of the school

- ▶ It is important to start with a clear understanding of the destination and how improvement of quality in education will be achieved.
- ▶ Commitment to collaborative work needs to be established but people have different perceptions of change.
- ▶ It is difficult to reach consensus among the participants in school reform efforts, albeit this may be crucial in its success.
- ▶ *Student learning* should be considered as the ultimate aim of any school improvement effort.

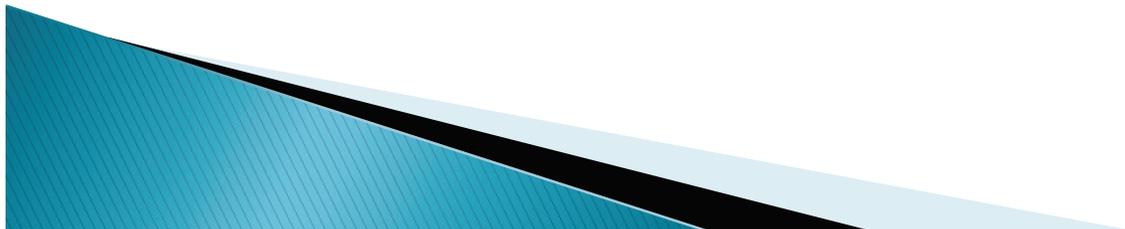


The dynamic approach to school improvement

B. Main Steps (see also Figure 2)

2. Establishing clarity and consensus about the aims of school improvement by addressing school factors which influence learning and teaching

- ▶ Presenting the dynamic model can assist school stakeholders' understanding of the necessity of developing a School Self-Evaluation (SSE) mechanism, which will collect data about each school factor and its dimension.
- ▶ School stakeholders should not only be aware of the factors that need to be addressed but they should also understand that addressing them can help them achieve better learning outcomes.



The dynamic approach to school improvement

B. Main Steps (see also Figure 2)

3. Collecting evaluation data and identifying priorities for improvement

- ▶ Drawing on the expertise of the A&R Team, analysis of the data can be conducted and its results will help school stakeholders identify priorities for improving the functioning of specific factors and/or grouping of factors.
- ▶ The improvement area has to be announced to the whole school community and comments/reactions should be considered in defining the area in a way that helps not only the teachers but also parents and students understand the factors that are addressed.



The dynamic approach to school improvement

B. Main Steps (see also Figure 2)

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

- ▶ The dynamic model refers to qualitative characteristics of the functioning of factors which increase their impact on learning.
- ▶ Members of the A&R Team share their expertise and knowledge with school stakeholders, providing additional input to existing ideas, experiences and knowledge.
- ▶ Effective policies are not only those which are clear to the stakeholders but also take into account the ability of the stakeholders to implement the policy.
- ▶ The final decisions are 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 of the stakeholders of each school.



The dynamic approach to school improvement

B. Main Steps (see also Figure 2)

5. Monitoring the implementation of the improvement project through establishing formative evaluation mechanisms

- ▶ School stakeholders develop internal evaluation mechanisms to monitor the progress of their improvement efforts.
- ▶ The role of the A&RTeam is important, as their expertise in conducting evaluation is shared with school stakeholders.
- ▶ School stakeholders should be directly involved in conducting formative evaluation.
- ▶ Exchange of ideas and experiences between stakeholders and the A&RTeam may help school stakeholders agree on how to improve their action plans.



The dynamic approach to school improvement

B. Main Steps (see also Figure 2)

6. Conduct a summative evaluation to measure the impact of DASI

- ▶ School stakeholders (with the support of the A&R Team) 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).
- ▶ Positive findings are expected to increase the commitment of a school to the DASI.
- ▶ Summative evaluation may 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.



The dynamic approach to school improvement

C. Investigating the impact of DASI upon student achievement

- ▶ Four experimental studies revealed that DASI had a stronger impact on learning outcomes than the participatory approach to teacher and school improvement which gives emphasis to professional experiences (see Table 2).



Table 2. 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

Table 2. Experimental studies investigating the impact of using DASI rather than participatory approaches that are based on practitioner's expertise

Studies:

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 (Antonioni & Kyriakides, 2011).
 3. Using the dynamic model of educational effectiveness to design strategies and actions to face bullying (Kyriakides, Creemers, Bosker, Muijs, Rekers-Mombarg, Papastylianou, Van Petegem, & Pearson, paper under review).
 4. Searching for stages of teacher skills in assessment (Christoforidou, Kyriakides, & Antonioni, paper under review).
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Conclusions and suggestions for further research

- ▶ The research agenda of EER should be expanded and cover issues associated not only with modeling and evaluating effectiveness but also with the development of a theory-driven and evidence-based approach to school improvement.
- ▶ We need to investigate the role of the A&R Team in supporting schools to improve their effectiveness and the impact of formative evaluation in school improvement efforts next to the role of summative evaluation.



Conclusions and suggestions for further research

- ▶ Only few studies investigated the impact of effectiveness factors on promoting equity.
 - Further research is needed to identify whether factors included in the dynamic model are associated both with the quality and the equity dimension of educational effectiveness.
- ▶ Since there is some evidence showing that schools can achieve both dimensions of educational effectiveness (Kyriakides & Creemers, 2011), we need to develop further the dynamic model and examine whether DASI can promote both quality and equity in education.



Thank you for being attentive!

