THEORIES ON EDUCATIONAL EFFECTIVENESS AND INEFFECTIVENESS

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Why theory?

"In addition to informing current practice and policy, research in education should support the development of <u>explanatory and predictive theories of educational processes and mechanisms.</u> Education research must answer questions about why, how, under what circumstances, and for whom, education practices and policies affect individual outcomes. <u>Without an evidence-based theory of educational processes and mechanisms, pragmatic evidence of effectiveness may not be generalizable to new settings or different populations.</u>"

(From: SREE 2011 Spring meeting, Conference Program)

State of Play

The main conclusion based on an international review of 109 school effectiveness research studies, was that only six could be seen as theory driven. This number could be, somewhat arbitrarily, raised to eleven, by including those studies that were based on models that made reference to specific broader conceptual principles (Scheerens, 2012)

Studies that used theory

reference	theory	Country
Coates, 2003	Micro-economic theory	USA
Griffith, 2003	Quinn and Rohrbaugh model	USA
Hofman et al., 1996	Coleman's functional community theory	Netherlands
Hoy et al., 1990	Parson's social systems' theory	USA
Kyriakides, Campbell and Gagatsis, 2000	Creemers comprehensive model	Cyprus
Kyriakides and Creemers, 2008	Dynamic model of educational effectiveness	Cyprus
Kyriakides and Tsangaridou, 2008	Creemers comprehensive model	Cyprus
Reezigt et al., 1999	Carroll model, Creemers model	Netherlands
Stringfield, Reynolds and Schaffer, 2008	Schools as High Reliability Organizations	USA/UK
Tarter and Hoy, 2004	Bolman & Deal and Hoy and Miskell as theoretical bases	USA
Van der Werf, 1997	Creemers comprehensive model	Netherlands

An empiricist field of study

- Developed as a reaction to a practical question: do schools make a difference?
- A normative context of enhancing the quality and equity of education (school effectiveness *movement)*
- Engineering approach, applied science at best
- Participatory branch, researchers and educational practitioners collaborate

EE as a field of inquiry and knowledge application

	theory	Rigorous methods	Advanced analyses	Research evidence	Use of practical knowledge
Fully fledged science	X	X	X	X	?
Engineering		X	X	X	X
Partnership researchers and practitioners				X	X

What is a theory?

- An explanation of an observed relationship between phenomena.
- Consisting of a) a set of units, b) a system of relationships between units, c) interpretations about (b) that are comprehensible and predict empirical events
- (Odi, 1982, p 55, Snow, 1973, p.78)

Stages in theory development

- F- theory: formative hypotheses
- E- theory: elementism; first step to more general elementary concepts
- D- theory: descriptive theories & taxonomies
- C- theory: conceptual theories & constructs
- B- theory: eclecticism, borrowing from more established theories (Snow, 1973)

Positioning EE with respect to Snow's stages

- We have a knowledge base that consists of a relatively stable set of general concepts, in the sense of factors that "work", and effect sizes established in meta-analyses (F and E theory)

- We have multi level conceptual models (D theory)

- We have just fragmented work on conceptual theories and connection with more established theories

Overview of the structure of the rest of the presentation

- Some reflections on the knowledge base
- The structure of integrated, multi-level educational effectiveness models
- The potential of general theories based on the rationality paradigm
- Two alternative theories, loose coupling and self-organization
- The potential of these theories to explain effectiveness and ineffectiveness
- The value of general theories in furthering a theory oriented working program for educational effectiveness

The Knowledge base (E & F theory)

- the set of factors that is addressed in educational effectiveness research
- effect sizes for these factors in meta-analyses
- Impression of results from international studies

Consistency in the factors addressed in research; from state of the art presentations at ICSEI, 2011

EER (Educational Effectiveness Research)	TE (Teacher Effectiveness Research)	SSI (System and School Improvement)
Effective Leadership	Opportunity to learn	Dimensions of organizational health
Academic focus	Time	School based review
A positive orderly climate	Classroom management	School development planning
High expectations	Structuring and scaffolding, including feedback	Comprehensive School Reform
Monitoring progress	Productive classroom climate	Facets of educational leadership (transformational, instructional, distributed)
Parental involvement	Clarity of presentation	
Effective teaching (time)		
Staff professional development	Enhancing self regulated learning	
Pupil involvement	Teaching meta-cognitive strategies	Effective systemic reform; see page 15 Hopkins et al., among others, student achievement and teaching quality emphasis.
	Teaching modeling	
	More sophisticated diagnosis	
	Importance of prior knowledge	

Results from meta-analyses (1)

School level variables

	Scheerens *et al.*, 2007	Hattie, 2009	Creemers & Kyriakides, 2008
Consensus & Cohesion	.02	-	.16
Orderly climate	.13	**.34**	.12
Monitoring & evaluation	.06	**.64**	.18
Curriculum/OTL	.15	**-**	.15
Homework	.07	**.30**	-
Effective Learning Time	.15	**.34**	-
Parental involvement	.09	**.50**	-
Achievement orientation	.14	**-**	-
Educational leadership	.05	**.36**	.07
Differentiation	.02	**.18**	-

Results from meta analyses (2)

Teaching level variables

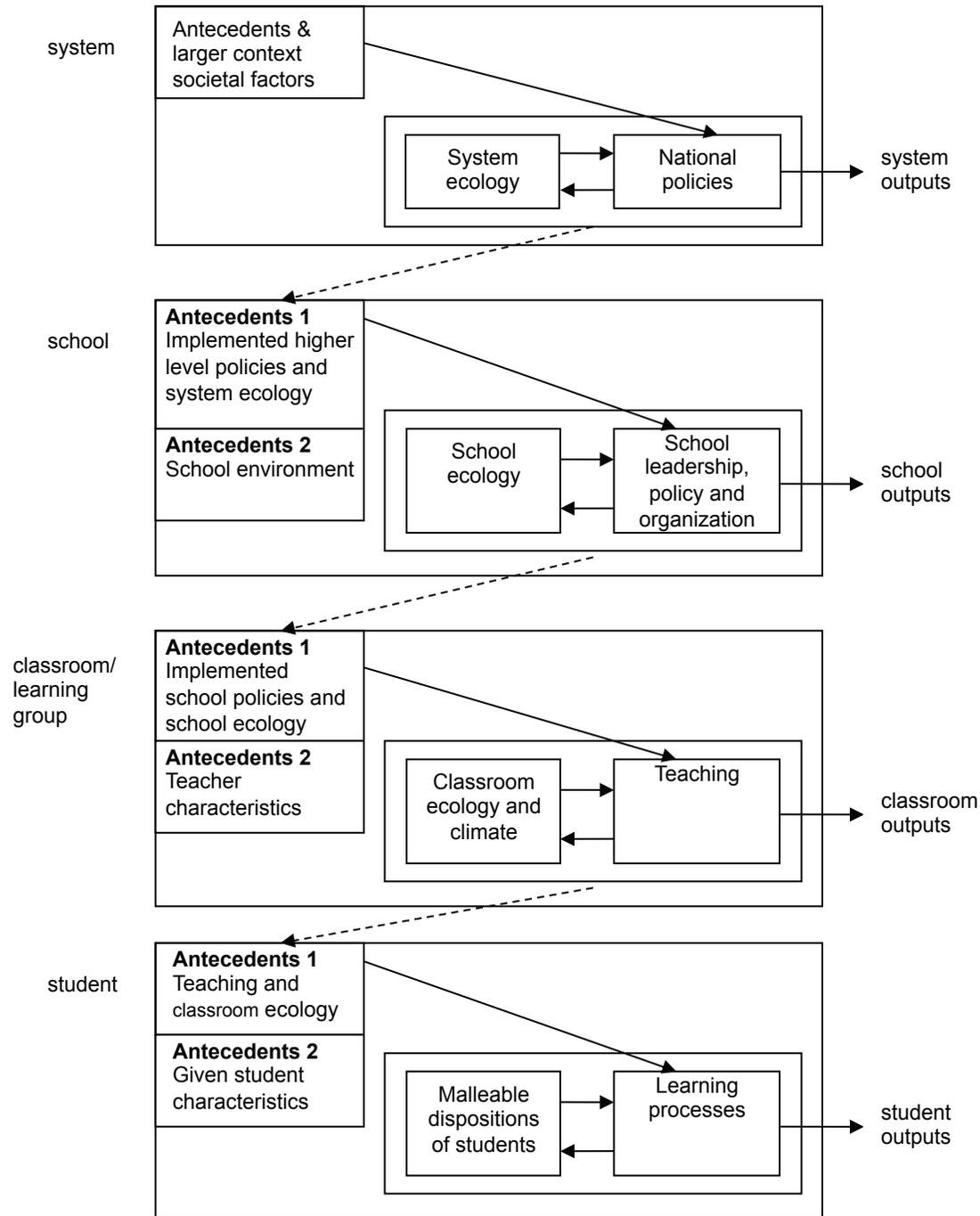|	Scheerens *et al.*, 2007	Hattie, 2009	Seidel & Shavelson, 2007
Time and OTL	.08	**.34**	.03
Classroom management	.10	**.52**	.00
Structured teaching	.09	**.60**	.02
Teaching learning strategies	.22	**.70**	.22
Feedback & monitoring	.07	**.66**	.01

International studies

- TIMSS and PISA, generally show low effect sizes (Bosker, 1997, Witziers et al., 2003, Luyten et al., 2005).

- Most successful school variable in PISA 2000 (disciplinary climate) only significant in about a third of the countries (Luyten et al., 2005)

- Limited amount of change between 2000 and 2009 in both reading performance and explanatory variables at system and school level (Scheerens, Glas and Luyten, 2012, PISA data sets)

Conclusions about the knowledge base

- Consistency across time in the factors that are seen as enhancing effectiveness

- Important differences in the estimates of effect sizes

- Little generalizability of the factors "that work" across countries (results from PISA)

- Implications for theory: explanation of ineffectiveness next to effectiveness

Conceptual models (D theory)

- Integrated multi-level models of educational effectiveness by (among others) (Stringfield and Slavin, 1992, Scheerens, 1992, Creemers, 1994). More recently the Dynamic Model of Educational Effectiveness by Creemers and Kyriakides (2008)

- Illustration of structure on the basis of the conceptual framework for PISA 2009, Scheerens, 2007

Model for PISA 2009

system

Antecedents & larger context societal factors

System ecology → National policies → system outputs

school

Antecedents 1 Implemented higher level policies and system ecology

Antecedents 2 School environment

School ecology → School leadership, policy and organization → school outputs

classroom/ learning group

Antecedents 1 Implemented school policies and school ecology

Antecedents 2 Teacher characteristics

Classroom ecology and climate → Teaching → classroom outputs

student

Antecedents 1 Teaching and classroom ecology

Antecedents 2 Given student characteristics

Malleable dispositions of students → Learning processes → student outputs

Characteristics of the model in figure 1

- Recognition of ecological factors, next to malleable factors

- Assumption of considerable autonomy at each level; in other words instances of loose coupling next to tight coupling

- Invitation to consider the nature of across level associations of malleable variables, making ecological variables malleable, the role of feedback, analyzing moderating and mediating factors

- Space for seeing the limits of malleability of educational systems

Use and potential of conceptual models

- Instrument for conceptual mapping of the knowledge base

- Potential to add to better accumulation of research

- Generate substantive hypotheses for research

- Identify areas for more formal modeling, e.g. indirect effect models, path models

The rationality paradigm

- Complete knowledge on states a system is in (entrance situation, as well as intended end-states (goals)
- Complete information on alternative actions (means) to reach goals
- Known function connecting means and goals

Connection of the rationality paradigm with educational effectiveness

- The rationality paradigm is an ideal type model, when projected into the world of social interference, weaker approximations are used (e.g. bounded rationality, incrementalism)

- The very concept of educational effectiveness (as means to goal analysis) is to be seen as an instance of the rationality paradigm

- Alternative theoretical interpretations highlight different mechanisms to bring about effective goal attainment

- These theoretical interpretations are seen as meta-theories of educational effectiveness; (Snow: B-theories)

Theoretical interpretations of the rationality paradigm

theory	mechanism
Synoptic planning	Proactive structuring
Contingency theory	Fit
Cybernetics	Evaluation and Feedback cycles
Public choice theory	Alignment of organizational and individual rationality

Rational theories and global intervention strategies

theory	Intervention strategies
Synoptic planning	**Curriculum planning** **Evidence based reform** **Formalization of organizational processes and structural arrangements**
Contingency theory	**Comprehensive School Reform** **Differential effectiveness** **Adaptive teaching**
Cybernetics	**Accountability policies** **Organizational learning; school self evaluation**
Public choice theory	**Free school choice** **School autonomy** **Competition**

Rational meta-theories and middle range theories

theory	Middle range theory
Synoptic planning	**Schools as High Reliability Organizations** **Scientific management** **Evidence based teaching programs** **Goal setting theory (Locke and Latham, 2002)** **Research and development approach to school improvement**
Contingency theory	**Fend's theory of the school** **Quinn and Rohrbauch's competing values framework** **Creemers and Kyriakides' Dynamic Model**
Cybernetics	**New public management** **The school as a learning organization** **Organizational learning as a process (Argyris & Schon)** **The output driven school (Coleman, 1992)**
Public choice theory	**Utility functions** **Production functions**

Alternative theories

1) Loose coupling (Weick)

2) Applications of complexity theory

Common elements:

- Less resp. no importance attached to management, planning and control

- concept of emergence as an alternative kind of dynamics

- focus on change and creativity through complex interactions at micro level

Transformative Teleology (Stacey et al., 2000)

Theory of complex adaptive systems:

- - Diversity of initial conditions is seen as a driver of interactions that could be innovative
- - phases of stability and instability ("attractors")
- - non linear developments
- - preoccupation with disorder (Luhman: "*Restlessness about restlessness increases restlessness*")
- - rules amidst chaos
- - non managed dynamics
- - attention for the informal organization, interaction processes between members

Examples applying concepts from complexity science

- Daily et al (2011), studied the development of interaction patterns between educational administrators in the context of the implementation of No Child Left Behind policies.

- Scheerens, (2004, 2008) interpreted student and teachers composition effects as instances of non managed "causes", dependent on starting conditions at micro level

Various interpretations of "ineffectiveness"

- "ineffectiveness" as modest effectiveness
- Characteristics of failing schools
- Lack of generalizability across countries
- Inertia where change was expected

"Ineffectiveness" = modest effectiveness

- Low effect sizes of our favorite effectiveness enhancing malleable conditions (like leadership and monitoring)
- Small or negligible differences between apparently strongly different treatments (like direct teaching and constructivist teaching)
- Large effects of background conditions, composition variables and "ecological" variables
- Small but consistent effects of evidence based comprehensive school reform programs
- Low generalizability of malleable factors across countries

Failing schools

School level
−lack of academic focus
−teachers working in isolation
−academic periods starting late and ending early
−lack of coordination between teachers in use of textbooks
−bureaucratic leadership, not curriculum or instruction oriented
−head teachers passive in teacher recruitment
−lack of teacher assessment
−no public rewards for students' academic excellence
−difficulties in maintaining funding
−underutilization of library

Classroom level
−a leisurely pace
−minimal planning
−low rates of interactive teaching
−parts of mandated material not covered in teaching
−lack of any sense of academic push

Student level
−low time on task
−low opportunity to learn in academic subjects
−classes experienced as "intellectual anarchy" (lack of structure)

Characteristics of failing schools, (Stringfield, 1998)

Rational meta-theories and ineffectiveness

theory	Ineffectiveness
Synoptic planning	**Standardized operating procedures in teaching.** **Goal displacement.** **Lack of flexibility and innovation** **"Red tape"**
Contingency theory	
Cybernetics	**Negative side effects of high stakes testing.** **Resistance to assessment and evaluation.** **Factors preventing organizational learning.** **Evaluation apprehension**
Public choice theory	**Off- task behavior. Political processes. "Make work",** **Exaggerated managerial overhead**

Functional and dysfunctional features of loose coupling

Potential for effectiveness	Features that explain ineffectiveness
-Lower coordination needs (lean management); - Good fit with autonomy needs of professionals - Avoidance of exaggerated formalization -As a condition for change (unfreezing) -Recognition of subtle and informal socialization	- Corruption of feedback -Unequal participation of staff in improvement initiatives - Loose coupling is the antithesis of alignment - Lack of fidelity in program implementation - plurifinality (More than 1 way to Rome)

What theory on CAS has to say about educational effectiveness and ineffectiveness

Effectiveness	Ineffectiveness
-Much autonomy needed for innovation -Emergence of… innovation, survival, identity.. based on free interactions among members in and outside the organization	-Unpredictability outcomes of interactions (functional or dysfunctional) -A view of organizational functioning that goes beyond the formal organization -Effectiveness is denied as a too reductionist concept -Failure to address the confrontation between formal and informal organization

Stamp collecting or working program?

- What I have intended to show is that sensible meta-theories on educational effectiveness are available, and in their turn can be used as a basis for categorizing middle range theories and conceptual models.

- Moreover, these theories are capable of explaining effectiveness as well as ineffectiveness.

- But does this work really lead up to a theory oriented program of work in the realm of educational effectiveness?

What should a theory oriented working program bring about?

- We are not theorizing for theories sake, but to improve research and have more societal relevance as well.

- More explicit models could stimulate better accumulation of research, less fragmentation, less reinvention of the wheel.

- A gradual move to educational effectiveness research as a science could also help in providing adequate and realistic advice in the face of high running expectations; part of this might be a clearer picture of the limits of malleability.

The way ahead

- It is unlikely that educational effectiveness research will become theory driven as the sole result of a deductive process starting out from meta-theories

- Instead research is likely to keep on being fragmented and strongly determined by local funding opportunities and government initiatives

- The incremental way ahead is through improved model building and increasingly sophisticated meta-analyses (with a continued very constructive role of data-analytic advances)

- Yet, at some point this inductive approach could reach a level of generalization that would make linking up with deductions from meta-theories opportune .

The way ahead (continued)

- A theory oriented working program on educational effectiveness, could work from both sides:
- Inductive: continued research syntheses, as well as synthesis of conceptual empirically tested models
- Deductive: testing the effectiveness of key mechanisms at system level (internationally comparative); exploring the value of meta-theories as ordering framework for middle range theories; connecting empirically tested models and middle range theories