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SYSTEMATIC REVIEWS OF
**RESEARCH
IN BASIC
EDUCATION**
IN SOUTH AFRICA

CHAPTER 4

Review and evaluation studies of school effectiveness and improvement in South Africa: A systematic and critical appraisal

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Abstract

This chapter provides a scoping review of recent research and evaluation studies of various South African school improvement interventions. The aim is to present the findings of the studies as well as their strengths and weaknesses in terms of what they say about factors associated with improved learners' results and the kind of support and pressure mechanisms needed for effective school change. While all studies focus on school-based factors, and some acknowledge factors outside of the formal education system that undermine learners' results, none of the studies provides a reasonable explanation of how and why certain factors work better to improve and change schools. It therefore argues that reviews and evaluation studies need to rely on theories of education in society and theories of teaching and learning in examining improvement interventions. It is only then that scholars will contribute to knowledge about effective intervention programmes or policies that can reduce educational inequalities.

Introduction

In the last 25 years, South African education departments have struggled to improve the performance of disadvantaged black schools through various school improvement projects and interventions. More recently, education departments and NGOs have worked in partnership towards more large-scale improvement programmes. Scholars and evaluators have studied these different improvement interventions with the view to improving the knowledge base for effective South African school improvement models.

This chapter conducts an overview of eight qualitative research and evaluation studies of South African school improvement interventions. The focus of these studies, based on secondary data, is to identify the key effectiveness and improvement factors associated with improved learner performance as well as the support and pressure mechanisms needed for effective school improvement and change interventions. This overview takes the form of a qualitative scoping review that asks the following question: what do these studies tell us and do not tell us and how can a broader perspective add to the study of school improvement.

A qualitative scoping review is a relatively new approach that aims to provide an overview of the available research evidence and findings in a research area. Scholars

mention that scoping reviews examine the extent, range, and nature of research activity in a topic area, determine the value and potential scope and identify research gaps in the existing literature (Arksey & O'Malley, 2005). Daudt et al. explain that scoping reviews “map the literature on a particular topic or research area and provide an opportunity to identify key concepts; gaps in the research [which] inform practice, policy-making and research” (Daudt et al., 2013, p. 8).

To select the eight review and evaluation studies of South African improvement interventions, we used three criteria. First, the studies had to be available to the public in the recent period. We went on the net and benefited from the assistance of expert consultants studying or evaluating improvement interventions. The eight studies we cover in the review were published in the period 2006–2016 as reports, chapters in books and one is part of a PhD. Second, the studies had to synthesize or assess recent South African improvement interventions targeting a large number of schools. The eight improvement interventions studied or evaluated occurred in the period 2000–2014 and involved many schools (and sometimes districts). Third, the studies had to cover interventions that rely on a diversity of improvement models with underlying theories of change. Many of the eight studies concluded with the need to change the focus of improvement interventions while others proposed a new model from which to assess school improvement interventions. Two studies argued for the need for large-scale systemic improvement interventions (interventions that happened subsequently, and two of which are analyzed at the end of this chapter), while one or two studies advised that review and evaluation studies should focus on the design and implementation of school interventions. The inclusion of these criteria proved productive as it enabled us to develop a broad perspective ‘from above’ of various South African school effectiveness and improvement factors as well as of drivers for pressure and support towards districts, schools and teachers.

In examining the eight research and evaluation studies of South African school improvement interventions (henceforth ‘the studies’), this review first clarifies the concepts of effectiveness and improvement factors as well as change tools of pressure and support. It shows that the studies provide evidence and findings about the ‘what’ of school improvement and change interventions. However, this review argue that they leave important knowledge gaps by not conceptualizing the ‘how’ and ‘why’ of improvement and change factors associated with better school performance. This review concludes that the only way to advance our understanding of SA school improvement models is by unpacking and further developing the theories of schooling and learning as these inform (often implicitly) the design of school improvement interventions and their review and evaluation studies. Critical insights from the political economy field will also improve school improvement research.

In section one, we outline the international debates around school effectiveness and improvement research. Section two traces recent developments in the school effectiveness and improvement research in South Africa to give a background

against which section three explores the findings, strengths and weaknesses of the South African studies in a chronological order. It then compares their similarities and differences in terms of the factors targeted and the kind of pressure and support used for effective school improvement and change interventions. This section ends with a critical appraisal of these studies. In section four, we draw on a study of schooling (Taylor et al., 2003) to explain the institutional complexity involved in changing teacher practices and demonstrate the importance of theorizing learning and change. We argue that a reliance on theories of schooling, of teaching and learning as well as of change is essential to explain under what conditions and why certain school improvement interventions are likely to have more or less impact. This theoretical dimension is illustrated in our critical appraisal of two promising large-scale systemic interventions and informs our suggestions for effective school improvement research. We conclude on the powerful explanatory power of the field of political economy.

International lens on school effectiveness and improvement research

The question of why some students from within and across countries perform better than others led researchers, such as Coleman (1968) and Bowles and Gintis (1976), to investigate the impact of schooling on the socio-economically and racially stratified US society. They found that students' achievements were more influenced by their socio-economic and family background than by school input effects. With the increasing availability, from the 1970s onwards, of large data sets on the education system, its throughput and outcomes, researchers continued to study the impact of different non-school and school inputs and practices on students' academic achievements (Jenks, Smith, et al., 1972; Teddlie & Reynolds, 2000). These statistical research studies became known as school production function studies and a basis for the School Effectiveness Research (SER).

In identifying the factors mostly associated with students' achievements, these researchers relied on quantitative regression analyses and multi-modelling techniques to correlate quantifiable school input and practices [independent variables] with students' achievements or results [dependent variable]. Being policy-driven, they hoped to identify causal links between policy variables and educational outcomes, or between socio-economic contexts and educational inputs and educational outcomes. SE researchers were influenced by, and rooted in, the dominant theories of the time, which, in the 1970s, were the liberal functionalist sociological theory of education, the liberal human capital theory and/or the neoclassical theory of economic growth. Unlike social reproduction theorists influenced by Marxism, who saw schooling as a tool for the reproduction of class (and other social) inequalities, these theories argued that education matters and is beneficial to all in society because of its

contribution to the skills needed by the country's socio-economic development and the promotion of social upward mobility.

Within liberal sociological theory, researchers in the field of school reform investigated processes of school improvement (Hopkins, Ainscow, & West, 1994; Slavin, 1998). Their interest was not in a snapshot of effective and non-effective schools but rather in what it takes for different schools to improve. School improvement research (SIR) developed swiftly during the 1980s and 1990s, at a time when international policy called to decentralise greater powers to schools because schools were then perceived to be the best level at which to take decisions to improve school performance. The SI researchers argue that school improvement strategies differ and have to be tailored to the state and context of each school. Following Fullan's emphasis (1982) on pressure and support as the two main drivers or mechanisms of change, Elmore (2005) theorises a version of this idea in his study on reciprocal accountability, where he argues that: "for every unit of change performance that is required, an equivalent unit of support and capacity building is expected to be invested".

Historical lens on school effectiveness and improvement research in South Africa

During the 1980s and 1990s, educational research was focused on how apartheid and capitalism worked together to produce two radical unequal systems of education, serving the interests of whites for racial oppression and class exploitation (Christie & Collins, 1982; Kallaway, 1984; Nkomo, 1990). The first evaluation study based on empirical investigations in schools was *Getting Learning Right* (Taylor & Vinjevoold, 1999), and this was followed with an empirical and conceptual analysis of schooling: *Getting Schools Working: Research and Systematic Reform in South Africa* (Taylor et al., 2003).

Arguably, one of the more influential school effectiveness studies which sparked other production function analyses was *No magic bullets, just tracer bullets* (Crouch & Mabogoane, 2001). This was one of the first SE studies post-1994 liberation that established the claim that poverty should not be seen as the main binding constraint in school effectiveness. These researchers argue that, taking into account various measures of poverty and school resources, some 30% of the performance of schools remains 'unexplained' and should be based on in-school differences. *Schools as (Dis) organisations* (Christie, 1998) turned to psychoanalytical organisational theorists to argue that poor organisational capacity is compounded by negativity and apathy and so school reform needs more than efficiency. It needs an understanding of the unconscious group activity which, under poor organisational conditions and poverty, gives rise to conflicts and contestations (1998, p. 293). School reform, she argues (drawing one from Zaleznik), needs to engage with the 'psycho-politics' of school members. In *Schools that work*, a Ministerial committee report (Christie, Butler, &

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Potterton, 2007) on poor schools in poor contexts which succeeded despite their circumstances, it is argued that these schools focus on their central task of teaching, learning, and management. The schools display a sense of responsibility, purpose and commitment, and their organisational culture emphasises work ethic, achievement and success. These schools became known as resilient schools.

Initially, the post-1994 national department of education (NDoE) introduced many school-based policy reforms (such as SASA, Curriculum Policy Framework, National Policy Framework for TED – or NPFTED). These reforms tend to focus on structural issues, such as democratic governance and school management, or systemic issues such as curriculum framework, the NPFTED and public sector capacity building. Yet, as many scholars warned, policies are blunt instruments that cannot easily affect the core business of schools, namely teaching and learning or the ‘instructional core’. This understanding, combined with the fact that many school issues (such as school culture, teaching practices) were beyond bureaucratic reach, explains where NGOs saw a gap to fill. In the 1990s, various NGOs initiated school improvement interventions, in particular for some disadvantaged schools. While some of them specialised in more effective and conducive school leadership and governance relationships, school culture and schools as learning organisations, others focused on school-based teacher training. Soon, the NGOs working with a whole school development approach saw the need to add or privilege the important target of professional development of teachers for better practices (e.g., Education Quality Improvement Partnership Programme (EQUIP), Imbewu). Noteworthy is that many NGO interventions acknowledged the negative role of poverty but they themselves did not to work with very poorly performing schools for the reason that they did not have any formal authority over these schools to achieve the basic level of functionality needed for their interventions.

In 2007, when SACMEQ II pointed to very poor school results, the Minister of Education (Naledi Pandor) in her budget speech argued that resources could no longer be considered as a legitimate reason for lack of improvement. Aware of the lack of sustainability of the school-by-school reform approach and informed by a systems theory approach (Gallie in Sayed, Kanjee & Nkomo, 2013), many NGOs moved away from school projects towards large-scale programmes in partnership with provincial departments of education or districts (such as the District Development Support Programme (DDSP) and the Khanyisa School programme), using pressure and support as the framework for intervention. This led to the incorporation of district capacity building because this level was perceived as vital to improve teaching and learning through better school support and monitoring and this for all schools including the seriously poorly performing schools. This improvement approach, which Soudien (in Sayed et al., 2013, p. 104) call combined “outside in” [state through a top-down approach] and “inside out” [NGOs through a bottom-up approach], was also known as a system-wide approach.

Eight review and evaluation studies: What do they tell us about school effectiveness and improvement factors, accountability and support?

In this section, we briefly summarise eight review and evaluation studies published between 2007 and 2016. The studies we chose are published either as separate reports, part of a PhD or as chapters in a book. We used two selection criteria for choosing the eight studies. First, they synthesise and assess all the main interventions that targeted a large number of South African schools (and sometimes districts) during the period of 2000 to 2014. In this specific period, South Africa had tried large-scale interventions for the first time in its history of school reform. Second, these interventions relied on a diversity of improvement models and underlying theories of change. Some pointed towards the school improvement model most dominant to date, at the centre of which is the idea of improving children's reading and writing. Two of the studies went as far as proposing a framework of school improvement interventions focused on design and implementation. There are no other review and evaluation studies on large-scale reform in basic education in South Africa. The inclusion of these two criteria proved to be productive as it enabled us to develop a view from above of the school effectiveness factors and the drivers for pressure on and support of districts, schools and teachers, respectively. We provide a critical appraisal of these studies and propose a more appropriate alternative improvement model.

History of school effectiveness and improvement movements in Africa (Fleisch, 2007)

Fleisch reviews the literature of school effectiveness and school improvement studies in Africa, during the 1990s, which, at the time of his writing, was dominated by the World Bank and other donor organisations as well as by American and European scholars who were not working or living on the continent (2007, p. 344). The central question he borrows from this literature is, "Do the same list of effective factors apply across contexts for all students?" (Riddle in Fleisch, 2007, p. 345). Alongside his analysis of the slow start of what he calls 'home grown movement' of school improvement, Fleisch emphasises the need to acknowledge the different political and organisational contextual factors that contribute to different levels of learners' achievements in developed and developing countries. He recommends that more attention be paid to contextual factors (geographic isolation), cultural teaching factors (mode of teaching and authority relations) and curriculum relevance.

Equity, efficiency and the development of South African schools (Taylor, 2007)

Taylor synthesises school effectiveness and improvement studies with the view to understanding whether they promote greater educational equity and efficiency. His review puts emphasis on systemic school reforms, showing the value and

the limitation of school-based interventions (mainly NGO-led). He classifies interventions conducted between 1994 and 2003 (for example, Education Action Zones, the Quality Learning Project and Dinaledi I) and after 2003 (Dinaledi II and a variety of production function studies). His study identifies the main effectiveness and improvement factors as poverty, language, home background, school management (instructional leadership) and cognitive resources. He also mentions teaching practices with appropriate pacing, evaluation and expectations from learners, better curriculum coverage as well as multi-support for instructional core. Taylor draws a distinction between top, moderately and poorly performing schools and argues that the accountability approach has not proven successful in the poorly performing schools and requires strong and well-functioning state organs to intervene.

Fleisch and Taylor attempted to refocus school reform from school-based intervention to systemic form, even if at the same time they recognised the weak organisational capacity (sometimes dysfunctionality) of many districts and provincial departments, as well as the importance of contextual differences.

Meta-analysis of programmes and projects supported by the Zenex Foundation between 2006 and 2011 (Roberts & Schollar, 2011)

Roberts and Schollar conduct a qualitative ‘meta-evaluation’ of 17 projects reports for the donor, Zenex Foundation. They use the project logic model which they developed for the purpose of “describing and analysing the development assumptions that underpin the different projects initiated and funded by the Foundation” (2011, p. 4). The different interventions include in their meta-analysis targeted learners, teachers, schools and supportive materials. Their analytical model is aimed at understanding the services (e.g. training) and material assistance (e.g. learning support materials) offered in the respective projects and the target group (learners, teachers, schools, etc.) as well as the intended change process outcomes (changes in practice or behaviours, access to materials). Their specific contribution lies in identifying key factors which affect a successful implementation. They argue that interventions should target only functional schools and require a multi-pronged approach such as support programmes, integration of aspects of teacher/administration and learner development, provision of materials, the enhancement of organisational effectiveness and rigorous monitoring and evaluation.

Creating effective schools (Taylor, Van der Berg, & Mabogoane, 2013)

This review begins with a summary of previous studies and lists key explanatory factors that undermine school performance including poverty; the lack of departmental bureaucratic capacity; the lack of teacher subject knowledge; effective classroom practices and accountability; and the lack of instructional leadership and systemic accountability (especially before the 2010 ANA results).

It then analyses the quantitative studies and the evolution of School Effectiveness (SE) versus what the authors call Economics of Education (EE) research studies. They also engage with some qualitative studies to explain the reproduction of social inequalities through educational inequalities. To understand how to optimise disadvantaged learners' learning, they draw on multilevel modelling techniques in identifying variables with different effectiveness impact and their interactional effects.

The search for quality education in post-apartheid South Africa: Interventions to improve learning and teaching (Sayed et al., 2013)

This book asks insiders to seven different improvement interventions (EQUIP, Imbewu Project, DDSP, Quality Learning Project, Learning For Living, Integrated Education Programme, Khanyisa School Programme) to comment on their interventions and relatively low impact on students' achievements. Gallie (in Sayed et al., 2013) provides a critical appraisal of these interventions. He argues that the lessons learnt from the evaluation of these interventions are that student achievements "can be associated with the social settings, institutional structures and organizational capacity" (in Sayed et al., 2013, p. 321). Notwithstanding, the interventions do not identify the priority needs of these educational institutions nor their theory of teaching and learning, within a context of sustainability and replicability. Gallie argues for the importance of an appropriate conceptualisation of the problem(s) and design of intervention in a specific context. He concludes that these studies lack an engagement with 'the how of change' (or an underlying theory of change).

In concluding the book, Kanjee and Sayed argue that interventions to improve school quality are informed by school improvement rationale, but analyses of the interventions do not make clear "the key issues to effect education changes" (in Sayed et al., 2013, p. 365). This is particularly worrying because the overall learners' performance still "falls well short of the acceptable norm for a specific grade level" (2013, p. 369). Like many other reviewers, Kanjee and Sayed assert that the priority interventions needed are those close to the instructional core, such as improving numeracy and literacy in primary and secondary schooling. They foreground enhancing teacher performance and management/district practices; back-to-basics pedagogical approach; effective teacher supervision and monitoring and teachers as agents of change. Other necessary enabling conditions noted are: stable and effective provincial and district as well as governance structures; stable policy environment; community mobilisation, consent, legitimacy and mutual trust.

Review project: Final revised report (Mouton, Wildschut, Richter, & Pocock, 2013)

These researchers conducted a systematic review of 57 "intervention evaluation articles" of school improvement published between 2005 and 2012. The uniqueness

of this review is that it develops “an intervention design framework” (2013, p. 68) which is offered as a heuristic device to both organise the findings and results from the “intervention evaluation articles” and serve as a decision-making framework to inform future designs of school interventions and their evaluations. The framework combines three key aspects: identification of effectiveness factors, conceptualisation of the modes of intervention and their underlying theory of change, and implementation context and obstacles.

Like other reviewers, Mouton et al. argue that interventions should deal with changes at the classroom, school and systemic levels while targeting school management, teachers, learners and parents and that they should be institutionalised. In particular, interventions should focus on early grade acquisition of literacy, language and reading skills; improvement of teacher knowledge for better coverage, pacing and sequencing and curriculum management; and school leadership. Their analysis calls for interventions to also aim at mitigating the negative influence of contextual societal forces affecting poor learner performance, such as HIV, violence and increased social inequalities.

They conclude that most interventions and their studies don’t make their theory of change explicit. Mouton et al. reinforce Roberts and Schollar’s contribution that, as much as effectiveness and improvement factors are important, implementation planning and implementation obstacles are also key to take into account because they influence the intervention impact. The main implementation issues, they note, are the quality of the implementing agencies and their quality assurance and monitoring. How long does the intervention last? How much is provided and how often? Do all the stakeholders around this intervention support and/or own this intervention programme? What is the temporal and socio-political context at the time? What is the unions’ stance on the intervention, what are the teachers’ attitudes and morale or political interests, stakeholder pressure, or other significant historical events that could assist or derail the implementation?

Identifying binding constraints in education (Van der Berg, Cloete, Wills, Gustafsson, & Kotze, 2016)

Van der Berg et al. summarise research literature and develop an evidence-based hierarchy of problems in need of being addressed. They identify four binding constraints that influence school outcomes and which perpetuate the cycle of poor educational outcomes, further entrenching students’ poverty and weak labour market outcomes: (1) Weak institutional functionality. (2) Weak teacher content knowledge and pedagogical skills. (3) Undue union influence, especially in appointing/promoting officials and school management. (4) Wasted learning time and insufficient opportunity to learn rooted in both poor teacher capacity and lack of accountability. They recommend stabilisation of early childhood development by increasing funding for training programmes, norms and standards for post-

provisioning, correct utilisation of DBE Workbooks for curriculum coverage and better calibre of school principals (Van der Berg et al., 2016, p. 11).

It is important to emphasise that, by the time they had done their analysis, a few provincial education departments had introduced a new kind of system-wide interventions which focused (to various degrees) on reading and writing at the Foundation Phase. Some of these large-scale system-wide primary school interventions seemed to produce better results than previous interventions, even though some did not seem to have been sustained.

Comparative meta-analysis of interventions to improve learners' achievement in South African schools (Besharati, 2016)

In a chapter (5) of his PhD, Besharati conducts a comparative meta-analysis of 18 credible studies of 19 different interventions, which covered 82 different effect sizes. These interventions, implemented throughout South Africa in the past two decades, were grouped in five categories, which include teacher-based, learner-focused, materials and resources, management- or system-oriented, whole school development. He notes that the positive impact of these interventions (even if the initial results had a very low base) is correlated with the study design, population sample, specific context/ circumstances, geographic areas and socio-economic contexts. He also warns that there is no guarantee of a similar impact from these structured pedagogic interventions if these are transferred to a broader policy environment.

His findings confirm that the greatest impact on learner achievement comes from early grade interventions in the form of literacy and numeracy programmes. These interventions refer to structured pedagogic programmes with multiple components, such as Learning and Teaching Support Materials and teacher training/coaching on how to use these resources. At high school level, additional teachers, assistants and human resources are the interventions with most benefits (e.g. Dinaledi).

Being mainly concerned with a quantitative meta-evaluation study, Besharati does not explain the 'why' of these interventions nor the implicit theory of change nor the implementation issues to be considered.

To summarise the studies, we created the Table 4.1 below in which we frame the variety of factors, ideas and proposals for improvement found in the studies around three sets of ideas:

- School effectiveness factors
- Accountability/pressure as a lever for change and improvement
- Capacity building/support as a lever for change and improvement⁵

By using these three categories at the different levels of the education system in this table, we can see the similarities in the eight school improvement studies as

⁵ We refer to the author/s of studies only if the particular item in the table is specific to that study.

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Table 4.1 *Our own compilation of a summary of effectiveness factors, pressure and support coming from different levels of the education system*

Education systems levels	School effectiveness factors	Accountability/ pressure as a lever for change and improvement	Capacity building/ support as a lever for change and improvement
Outside school factors	Poverty, parents' education, family settlement & structure, home language, reading and writing practices at home	Ensure minimum negative outside influence from unions (Van der Berg et al.); School/Community	Decision on appropriate LoLT, (Taylor et al., 2003); Positive school-community relations (Roberts and Schollar)
District (monitoring)	Minimum level of district infrastructure and organisational capacity to support and monitor schools and their staff; District management and leadership for effective institutional structures; Stable district and policy environment (Sayed et al.)	Effective district monitoring of curriculum coverage; Monitoring and evaluation of schools with mutual trust, consent and legitimacy (Sayed et al.)	Effective district administration of resource distribution; Effective district support of schools and curriculum delivery through meaningful school visits and training (Taylor et al., 2013)
School (management)	Functional schools; Minimum level of school infrastructure and capacity; School organisational effectiveness; School leadership and management with instructional focus; Good relationship between school staff and management of different districts	Effective monitoring and administration of teachers' work; Rigorous school monitoring of time on task and of teacher plans & assessment practices; Monitoring and evaluation of teachers with mutual trust and legitimacy (Sayed et al.)	Support from school management and instructional leadership re: teacher work, textbooks, time and time-on-task (Taylor, 2007); School organisational capacity and effectiveness (Sayed et al.)
School (classroom: appropriate use of cognitive resources)	Teacher qualification, teacher subject knowledge; Numeracy and literacy focus, back to basics curriculum pacing and sequence, pedagogy and evaluation, opportunity to learn, time-on-task	Monitoring of time on task, curriculum coverage, homework and learner achievement; Monitoring of teacher planning and assessment records; Reading frequency and quantity and quality of learners' writing in workbooks; Grade learner achievement test; teacher supervision (Sayed et al.)	Support for higher teacher expectations, for teaching reading and writing; time management and time on task (Taylor, 2007); Teacher training in LoLT; subject matter and pedagogical knowledge (Roberts and Schollar); Teacher training (Sayed et al.) back to basics (Mouton et al., Taylor et al., 2013)
Conditions increasing the chance of success	Functioning district and schools, young teachers, student resilience and ability to adapt and keen interest to improve, partnership (Mouton et al. and Sayed et al.); Interventions imply a <i>change process</i> which require an understanding of how effectiveness and improvement factors [in need of improvements] start changing, and so a theory of change or action is needed; Interventions need a theory of change to identify exactly the priority needs of educational institutions within a context of sustainability and replicability, drawing explicitly on a theory of learning and teaching.		

far as the factors targeted and the kind of pressure and support used as well as the conducive conditions for such improvement interventions.

Critical appraisal of these eight studies

The studies refer to school effectiveness factors such as the learners' home background, classroom and school processes and district management in order to test, through various sophisticated models of production functions and multi-level modelling, their correlations with learners' achievements. Yet, we identify five problematic issues. First, the predictor factors are not straightforward factors: they are often not easy to find proxies for and measure, and they may hide or obstruct other factors. The input and process factors all relate to, and influence, one another in a specific way, as they exist in a nest of complex relationships and contexts (Carrim & Shalem, 1999; Creemers & Kyriakides, 2006).

Second, the reviews do not provide a theoretical explanation of how such input and process factors relate to, and work with one another, nor how these factors affect learners' learning. Input and process predictor factors such as poverty, management practices, teacher practices or reading practices are rather complex because they are relational and socially constructed and have contradictory and even biased impact on different officials, teachers or learners.

Third, many SI researchers have long warned of the importance of context differentiation. The argument here is that teachers may need differentiated forms of training and professional accountability, and learners may require different pedagogies, assessments and socio-psychological support. It is therefore problematic to talk about teachers' competences or learners' achievements as monolithic categories. For example, curriculum pacing and district monitoring of curriculum coverage are unlikely to improve *all* teachers' teaching and *all* learners' learning as well as the promotion of greater opportunities for all teachers and learners to learn. We contend that these preferred changes will leave behind the more disadvantaged/struggling teachers or learners, with the possible effect of deepening already unequal educational opportunities.

Fourth, the only studies that engage explicitly with how schools and teachers start changing their behaviours, practices and performances are Sayed et al. and Mouton et al. The other studies work with the idea that pressure and support can change behaviour (see Table 4.1 above). The challenge is to ensure pressure and support are context-specific, well-calibrated, sequenced and aligned to each other.

Fifth, although the studies point to poverty as a factor in school improvement, none of the studies deals with the specific challenges of the very poorly performing schools. In fact, some studies (Taylor; Roberts and Schollar; Mouton et al.) suggest that interventions should target functioning schools only, which leave the poorest schools to the responsibility of the state.

The questions that are crucial to engage with are: What forms of teacher or principal training for what kind of teachers and principals? What comes first: accountability for development or development for accountability? What is the school and district capacity to monitor and support curriculum delivery, coverage, time on task and school readiness? Is there a school and district commitment and a will to do what is necessary?

In the next section, we draw on the conceptual work offered by *Getting Schools Working* (Taylor et al., 2003) in order to highlight both the complexity involved in changing teacher practice and to offer some insights into the institutional coordination which underpins large-scale interventions.

In search of a theory: Importance and role of theories of schooling and learning

Looking back at the reviews of improvement studies and their evaluations, it is clear that the majority is not concerned to provide a theorisation of schooling and learning in order to explain why, how and under what conditions the selected improvement factors are associated with students' improved learning. A theory of schooling could explain under what conditions and how schools' contexts matter; how and under what conditions teachers or learners sustain what they have learned. Beyond explaining more clearly why and how the key school factors affect different learners' achievements, such a theorisation could also guide the search for specific data on identified factors. They could specify which factors are to be privileged because they constitute vital entry points to improve schooling and learning.

In chapter 5 of *Getting Schools Working* Taylor, Muller and Vinjevold (2003) developed a theory of schooling with a view to analysing the relations between the factors and forces that shape the transmission and acquisition of school knowledge. Their primary interest is to understand how the many factors that constitute the phenomenon of schooling, and more specifically learning and achievement, "fit together and produce effects" (2003, p. 68). The conceptual syntax their theory develops is defended both conceptually (largely drawing on Basil Bernstein's work) and empirically (by reference to empirical data). Although their work is not a meta-analysis of school improvement, their analysis of schooling offers critical insights into the models of school improvement currently operating in schools in South Africa. They also state clearly that their analysis of schooling is intended to show "how to improve its processes and outcomes" (2003, p. 85).

The first claim in their theory prioritises one of the following three sets of what they call "categories of variables" which affect learning (2003, pp. 68-69). Their argument is that it is in the third set of factors that the school can add value to poor learners, despite their socio-economic disadvantages, as expressed in the first two sets of factors.

- *Contextual factors* or the socio-economic status of the child's family. This set consists of factors external to the school with influence on learning experience and achievement. They refer to the relation between poverty levels of the family, education levels of the parents AND literate forms used at the home. In broad terms, this set of factors refers to the parents' capability to act as a second site of acquisition.
- *Resource factors* or the material and cognitive resource factors internal to the school (pupil-teacher ratio, teacher education level, libraries and IT resources). More often than not, this set of factors mirrors 'the socio-economic status of the catchment of the school'.
- *Educational process factors*: "Management and leadership factors at school, district and higher levels, and classroom instructional factors can make a critical difference to pupil and school performance. These factors offer opportunities for education officials, principals and teachers to make more or less effective use of available resources, thereby facilitating or inhibiting the progress of children through the school system."

Most of the studies acknowledge that the first and second sets of factors mirror the socio-economic contexts of the school and therefore '*more resources*' is a necessary condition for poor schools' improvement. However, the studies also emphasise that *the form in which material and cognitive resources are managed by school leaders and by teachers, makes those resources sufficient or not* (Crouch & Mabogoane, 2001; Spaul, 2013, 2015).

The third set of factors, which is dominant in South Africa up to today, indicates that opportunity to learn can add value to poor learners if structured properly:

...after the socio-economic origin, *pedagogic practices* – reflected in the orchestration of classroom activities and the management of the institutions – collectively constitute *the most important set of factors which structure the educational opportunity of children*. Furthermore, the quality of pedagogic practice is the key mechanism for overcoming the influence of social origin (Taylor et al., 2003, p. 82).

The second claim in the theory of *Getting Schools Working* is based on Bernstein's theory of language code acquisition, which explains the extra difficulties poor learners experience in acquiring formal knowledge. Following this proposition, the authors' analysis prioritises learning of reading and writing, arguing that these are fundamental to the acquisition of school knowledge (which is radically different from everyday knowledge). Programmes, material and monitoring process have to be developed at three systemic levels (national, provincial/district, school/classroom) to maximise learning language proficiency. Since several studies (Howie et al., 2017; Spaul, 2015) have documented the poor *reading, writing and numeracy levels of early graders* in poor schools in South Africa, the more recent interventions

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increasingly focus on improving reading and writing practices in the classroom. As our summaries above have shown, prioritising primary over secondary education is also dominant.

The third claim in their theory is that school improvement should target teachers' knowledge and/or practice – *how they teach and how they work*. Taylor et al. argue that teachers' better curriculum pacing and strongly framed evaluation practices are likely to provide levers of change and impact on the quality of schooling and the achievements of learners from poor social classes. This claim is at the heart of the complexity involved in school improvement: the practice of teaching is nested in other substantive practices (curriculum, pedagogy, evaluation and school management). At every level of the system (classroom, school, district), there is some function or process which affects what and how teachers teach whatever they teach, and how they work. The question of school improvement therefore cannot be: which level to choose to improve but *what kind of intervention will bring the other levels into productive relations*.

From his study of a specific NY district, Elmore (1997) concludes that only a coherent conceptualisation of whole intervention programmes, that have strongly aligned components at different levels, have a chance of working. Districts need a comprehensive strategy to mobilise their knowledge and resources into alignment “in the service of professional development for system-wide instructional improvement” (1997, p. 3). This vision, purpose and rationale for the district and its schools, he qualifies, have to become “a joint, collegial responsibility of everyone in the system, working together in a variety of ways across all schools. Only then, a long enough commitment can be expected from people to actually internalize the change required” (1997, p. 9). Hence, the challenge is to put together and mobilise various factors at the different levels into a comprehensive, coherent and aligned strategy.

The idea that teaching is nested in other substantive practices, spread over different levels of schooling, presents a complicated challenge in school reform. The more dimensions or levels are incorporated in intervention programmes, the more partners are needed to be brought in to offer their expertise, and the focus on improvement of teaching and learning is in greater danger of becoming diluted, non-aligned or not coherent. Some of the studies show that too often partners work in silos to improve or build the capacity and accountability of the school effectiveness and improvement factors they are in charge of, whether at the level of the classroom, school and/or district. Gallie (in Sayed et al., 2013) goes as far as suggesting to appoint a single service provider to develop the material and capacitate trainers to use the material results in greater reliability and effectiveness of delivering aligned services. What is at stake in school improvement is the need for some or other form of relation between *coordination of activities* and *regulation*

of agents at different levels of schooling. Any intervention needs to filter through levels and different categories of agents with their specific needs and interests.

By *coordination* we refer to standardisation of the main functions of schooling, making sure that learners in all the different schools are exposed to the same curriculum and the pedagogical forms used by teachers to cover the curriculum provide learners with similar enough meaningful opportunities to learn. Education systems embody social values and their management brings about the question of power relations between management and teachers. *Vertical regulation* of agents refers to the regulation of the movement of management and curriculum knowledge from its centre of production to its application (at different points of the educational division of labour and in the classroom, respectively). Overall, this is about regulation of the social relations between knowledge experts and trainers, district officials, school management, teachers and learners.

In *Getting Schools Working*, the authors advocate a productive relation between opposites – *hierarchal coordination and regulation of cognitive resources, on the one hand, and open interaction between agents around learning and acquisition of knowledge, on the other*. The idea here is that ‘what is to be taught, when and at what pace’ is stipulated by the national curriculum and curriculum specification of different forms (such as scripted lesson plans, curriculum trackers). What counts as appropriate performance is specified by assessment standards and evaluative criteria transmitted through the curriculum (such as cyclical tests and national standardised assessment), with some discretion for teachers in view of their learners’ needs and contexts. Also, rules of behaviour are regulated by monitoring teachers’ punctuality and attendance, curriculum coverage and time-on-task.

The social relation around learning should on the other hand be open and personal, particularly when giving feedback on performance. Taylor et al. argue that learners’ understanding of evaluative criteria can be transmitted centrally by various means of assessment. There is, however, a personal dimension in the relation between learners and teachers that has to be nurtured: “evidence shows that the teacher’s response is more likely to achieve its desired social and cognitive effects, if it is done through a personal mode of communication, as opposed to the one that foregrounds the hierarchical role of the teacher” (2003, p. 83). Openness is argued to be effective in teachers’ learning (“providing advice to teachers by management”) (Taylor, 2007, p. 534) and teachers’ discretion in learners’ learning (“pupils perform better in maths when the teacher is responsive to the stage of development of individual children, gives explicit feedback in response to pupil knowledge”)(2007, p. 535).

Taylor (2007) classifies the school system into three types (top, moderately and poorly performing schools). His analysis of moderately functioning schools foregrounds the hierarchical model of coordination of tasks and regulation of behaviour at district, school and classroom levels, with some discretion for teachers

on adjusting pace to learners' ability. He also emphasises time regulation of teachers' attendance, coordinating and monitoring of teachers' plans for curriculum coverage, and management of classroom assessment.

Equipped with this theoretical explanation of schooling, and in particular using the concepts of coordination and regulation, we are now ready to provide a critical appraisal of two promising recent large-scale improvement interventions, which have the potential of becoming system-wide sustained and institutionalised school reforms.

Two large-scale multi-dimensional improvement interventions

As more data sets became available indicating the poor performance of schooling in all provincial departments, the DBE developed an Action Plan (Department of Basic Education, 2015) to put pressure on provincial departments to attend to the poorly performing schools. Many introduced a system-wide strategy for instructional improvement to improve their average learners' results by focusing on early grade literacy and numeracy classes in underperforming schools. Informed by the claim that calibration consists of hierarchical coordination and regulation of cognitive resources, on the one hand, and open interaction between agents around learning, on the other, we now move on to examining the two largest system-wide improvement interventions.

In Gauteng, the 2010 Gauteng Primary Literacy and Mathematics Strategy (GPLMS) introduced in schools a triple cocktail intervention combining scripted lesson plans, learner materials and quality teaching capacity building (Fleisch, 2018). This instructional improvement intervention focused on learners' learning by a hierarchical coordination of teachers' activities through the introduction of scripted lesson plans. The introduction of coaches created (in most cases) a space for open relations around teacher learning and teacher discretion around pacing (Shalem, Steinberg, Koornhof, & De Clercq, 2016). This intervention produced some positive results with the learners of the 1 000 primary schools targeted (See Besharati, 2016), but it did not survive beyond 2013. This explains why the GPLMS remained limited to a system-wide classroom intervention, and did not involve many HoDs, let alone school principals, parents and district curriculum advisers. In actual fact, the strategy had planned to start with instructional improvement and subsequently involve parents and community as well as target the management of teaching and learning through stronger school management teams and better district support systems.

In 2015, this triple cocktail model of school reform intervention was reproduced in a slightly different form as quasi-experimental research interventions, also known as the Early Grade Reading Studies (EGRS) which were supported by the Department of Basic Education and implemented in selected provincial education departments (North West and Mpumalanga) during the period 2015–

2019. Using RCTs in around 200 provincial schools at a time (some targeted primary schools and others constituting a control group for comparison), the leading researchers tested the relative effectiveness of components within the triple cocktail treatment, while adding a few new components (e.g. provision of teacher tablets; classroom libraries) which were perceived as potential vital entry points to improve Foundation Phase performance. What is emerging so far is that, in addition to lesson plans and learners' quality materials, coaches seem to be a more effective component than teacher training (Cilliers et al., 2018) and that the recent experiment with classroom libraries appears encouraging. The only component that has not been tested is the quality and appropriateness of the lesson plans for all primary schools. Some qualitative studies have pointed to serious limitations of lesson plans in improving teacher learning of quite a variety of new and complex teaching practices (Hoadley, 2018; Shalem, 2018; Shalem et al., 2018; Shalem et al., 2016).

The findings suggest the importance of achieving calibration between context-specific support in the form of openness around teacher learning (coaches) and hierarchal coordination and regulation of the cognitive resource selected for this intervention. Yet, without a systematic study of the lesson plans and the way they are enacted in the classroom, the quality of teacher learning cannot be established.

While this GPLMS/EGRS large-scale system-wide instructional interventions never became full systemic interventions involving all the different levels of the system, another intervention in KwaZulu-Natal, managed by the Programme to Improve Learning Outcomes (PILO), was set up in two pilot districts from 2015 to 2017 and rolled out to other KZN districts from 2018 to 2021 (Christie & Monyokolo, 2018). PILO targets, right from the beginning, all stakeholders: the KZN department, the district, the trade unions, the school management and HoDs and, in that sense, became the only large-scale *systemic* improvement programme, with a sustainability and institutionalised aim (De Clercq & Shalem, 2019). PILO, however, does not target classroom instruction directly because its aim is to empower the HoDs and school principals to create a professional conducive environment for professional dialogues with their staff, with the view to improving their practices. PILO also targets the district and its circuits because of the belief in the link between effective districts and improved learner performance. The aim is to change "the working practices of CM [Circuit Managers], regular school visits, conversations based on evidence, improved reporting, sharing and reflection... System interventions that introduce new routines must be embedded to shift practices and create new support dynamics" (Mc Lennan, Muller, Orkin, & Robertson, 2018, p. 231). Practices of coordination included HoD toolkits which regulated the supervision and monitoring expected of them; curriculum planners and trackers (and scripted lesson plans only for Foundation Phase teachers), weekly reflections and professional conversations to regulate teachers' work. This model

appears more horizontal in terms of authority structure and by far more multi-levelled. The emphasis on professional conversations (openness around teacher learning) is strong but with weaker guidance on teacher practice. The emphasis of monitoring of curriculum coverage can be in conflict with the aim of building teachers' confidence to reflect on their weaknesses (Shalem & De Clercq, 2019).

Conclusion: Towards new theories?

Many scholars argue that the quality of school and non-school factors, which affect learning, are distributed differentially to the unequal socio-economic groups of society, with the consequence that socio-economic inequalities are reproduced and enhanced by educational inequalities. Indeed, more than often, school policies or improvement interventions benefit the better-off schools, teachers or learners rather than the underperforming schools (Jansen & Spaull, 2019; Sayed et al., 2013; Soudien, Reddy, & Woolard, 2019). This could be illustrated not by tracing the national changes in average learners' results but by analysing the changing composition of the breakdown of learners' results according to social classes (Van der Berg et al., 2016; Van der Berg & Gustafsson, 2019).

One main shortcoming of these review and evaluation studies of school reforms in South Africa is that they largely bracket out the ways in which chronic poverty, in which most learners in South Africa live, affect knowledge acquisition. Associated with this is Carnoy's argument (2019) that SE and SI researchers cannot easily explain the reasons behind sudden improvements or declines of students' results. He contends that the answer lies most likely outside of the formal education system and changes in the students' socio-economic status. He suggests that it is influenced by a broader set of socio-political factors which he calls 'social capital' (the degree of social consensus or level of trust vs violence in society, not unlike Sayed et al. suggest (2013). It is also influenced by the power politics, which have contradictory effects on why and how some learners engage [or not] with the knowledge acquisition process.

Last but not least, learning is significantly conditioned by psychological processes of cognitive development and of wellbeing. Most review studies do not deal with the question of how different teachers or learners learn. Interesting research is now available from cognitive neuroscience, or what others prefer to call the bio-psychosocial emotional approach to learning (Maté, 2019). Increasingly, evidence shows how the core cognitive capacities (such as Sustained Attention, Response Inhibition, Speed of Information Processing, Cognitive Flexibility and Control, Multiple Simultaneous Attention, Working Memory, Category Formation and Pattern Recognition) can be negatively influenced by the inter-relationship between poverty, ill-health, stress and adversity/trauma. Researchers (Darling-Hammond, Flook, Cook-Harvey, Barron, & Osher, 2019, p. 1) argue

that, according to insights from the science of learning, the “development of the brain is an experience-dependent process” and further “children’s development and learning are shaped by interactions among the environmental factors, relationships and learning opportunities, both in and out of school, along with physical, psychological, cognitive, social, and emotional processes that influence one another – both biologically and functionally – as they enable or undermine learning”. Some South African researchers dealing with poor learners (Fleisch, 2008; Harber & Muthukrishna, 2000; Richter, Mathews, Kagura, & Nonterah, 2018) have mentioned the difficult, traumatic and stressing environment that dominates the lives of many learners from poor and disadvantaged schools. These new theoretical and empirical insights have to be incorporated in research work on factors which affect learning.

One of the conclusions that this contention raises is that it is unlikely that all teachers need and will benefit from the same support and monitoring, and all learners need and will benefit from the same pedagogic and assessment practice and support.

From our theoretical perspective, PILO is the only large-scale intervention which is explicitly intending to slowly build a professional collegial set of practices, which allow learners’ differentiated needs to influence the system. Yet, placing curriculum coverage at the centre of its institutional vision seems to have resulted in HoDs and teachers focusing on the monitoring of, and accountability for, more curriculum coverage and much less on improvements in teachers’ understanding of the strengths and weaknesses of certain choices they make when they teach a topic and how different learners learn the topic or the *raison d’être* hidden behind the failure of particular learners to grasp an aspect of the topic (De Clercq & Shalem, 2019).

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