CHAPTER 1

Since AIDS was first identified in 1981, more than six million people had died from the disease by the start of the 1996 Vancouver AIDS conference. On the last day of the meeting, Dr Martin Markowitz, a researcher from the Aaron Diamond AIDS Research Center, came to the podium to describe the early results of a small clinical trial. Twelve young adult male patients who had recently been diagnosed were given a combination drug therapy that included AZT and 3TC with a new type of drug called a protease inhibitor. AZT and 3TC treated the early stages of the disease; the protease inhibitor was designed to block the multiplication of an enzyme critical to the spread of the virus in the body. Dr Markowitz described how within nine months of receiving the new ‘triple cocktail’ treatment, HIV levels in 9 of the 12 men had fallen below detectable levels and their white cell counts had risen sharply.

The triple cocktail is not a cure, but in time it changed AIDS from the leading cause of death of young adults to a manageable condition. The discovery of the efficacy of the triple-drug regime was a turning point in the treatment of the global epidemic. That said, it took more than a decade for the proven treatment to reach the majority of patients in need. In the early stages of the use of the triple cocktail, the cost of treating a single patient was up to US$20 000 per year, unaffordable to all but the richest people and wealthiest countries. What complicated the matter was that it was not a simple treatment; to deliver it at scale required an advanced health system.

Over the next 15 years, the collective effort of hundreds of researchers, health professionals, activists and government officials in the Global South would make treatment available to millions of patients in resource-limited countries. The Durban AIDS conference in 2000 pivoted on debates about treatment access for the world’s poorest countries. An implementation breakthrough came in 2003 when researchers discovered how to reduce the number of pills required to be taken daily from around 15 to 2, and activists and governments negotiated the use of generic drugs that brought down the price to US$150 per person per year. Even with the cheaper and simpler-to-administer triple cocktail, many HIV patients still die, their deaths caused by severe malnutrition, late-stage take-up of the treatment, tuberculosis when treatment starts and anaemia (Vella et al, 2012).
Although seldom in the newspaper headlines these days, HIV and AIDS, the disease and the universal rollout of treatment, have touched most South Africans. It is an extraordinary story of success against what appeared to be overwhelming adversity, with the scientific discovery of an efficacious treatment and struggles for cost-effective ways to scale up treatment at its centre. It was the collective efforts of researchers, funders, bureaucrats, activists, lawyers and front-line health professionals that turned the disease from a post-apartheid national catastrophe into a difficult but manageable healthcare disease.

This book draws inspiration from this AIDS treatment story. The obvious way is indicated by the name given to the early grade learning intervention model, the Education Triple Cocktail, which is at the centre of the latter chapters of the book. But more than that, the global partnerships and international collaborations, the central role of empirical research, the urgency and levels of the funding provided, the recognition of the unique challenges of rolling out access in resource-limited settings and the solutions that were found to all of these challenges offer valuable lessons and inspiration to education researchers, activists and government officials striving to ensure that all children in school become successful learners, not only in South Africa, but across the Global South.

In the concluding chapter of my previous book, *Primary Education in Crisis*, I argued that what was needed to address the epidemic of underachievement in primary school reading and mathematics was rigorous evidence of ‘what works’. I had been convinced by the writings of a University of Chicago economist, Stephen Raudenbush, who argued that evidence-based instructional programmes, what he referred to as ‘instructional regimes’, could be used (like antiretroviral therapy regimens with AIDS) to fundamentally alter the patterns of instruction and resultant performance of primary education systems. Notwithstanding the pitfalls of ‘policy borrowing’ and adopting health sciences discourses for the study of educational problems, I was (and continue to be) convinced that a great deal of value can be extracted from evidence gained using scientific methods.

With this as the backdrop, my research agenda over the past decade has focused on helping to build such a rigorous knowledge base. While trained as an historian, I have moved over to what some of my colleagues used to call the ‘the dark side’ — quantitative research, and specifically the use of experimental and quasi-experimental methods to advance our understanding of how to improve learning outcomes at scale for poor and working-class learners, and narrow the unequal outcomes of our school system.
The first steps in the journey came with my involvement in a randomised control trial study designed to re-test the efficacy of a promising Intermediate Phase school mathematics instructional programme that used structured and differentiated worksheets in a set of self-contained workbooks. With the help and encouragement of the late Peter Fridjon, Dr Nick Taylor, Ingrid Sapire and Roulien Herholdt, I (Fleisch et al, 2011) designed our large-scale field experiment. The results were not what we anticipated — while the learners in the treatment ‘workbook’ group of schools did better than those in the ‘control’ group who got a standard textbook, and both groups improved substantially on the endline test, the intervention unit costs were substantially higher than those for the standard textbook. Our first field experiment demonstrated not only that cluster randomised control trials research was possible, but because of the rigorous design features, the findings would be powerful.

Advances in knowledge sometimes come from fortuitous occurrences. In 2010 I was asked to prepare a provincial strategic plan for an early grade reading programme to be implemented by the Gauteng Department of Education (GDE). Over the next four years, I advised the GDE management team, including Len Davids, Deb Botha, John Thurlow, Kholo Makhaga, Ingrid Sapire, Elspeth Khembo and Jonathan Williams as they developed a system-wide intervention model to improve early grade reading and later mathematics. It was during my research on the Gauteng Primary Language and Mathematics Strategy (GPLMS) that my thinking about change at the instructional core (Richard Elmore’s phrase) and system-wide reform models crystallised. I conducted qualitative case studies of various aspects of the intervention model, examining how teachers talked about the prescriptive lesson plans, their experiences working with instructional coaches in their classrooms, and asking questions about the new educational materials that were part of the programme. Unfortunately, a planned external evaluation of the GPLMS never happened, and though many colleagues in the sector who came and saw the instructional work in the schools were impressed, there was little rigorous evidence of the efficacy of the education triple cocktail model.

A group comprising Volker Schoer, Gareth Roberts and Amy Thornton from the Wits University School of Economics and I got started on the question of impact through the use of a hybrid regression discontinuity design/natural experiment (Fleisch, Schoer, Roberts & Thornton, 2016). The findings from this study were positive and promising, albeit limited to a local area treatment effect (LATE). Excited by the parallel experimental research coming out of Kenya and India, we suspected that our research on system-wide instructional reform was
moving in the right direction. What was needed was more and better evidence about whether the education triple cocktail model worked. Specifically, we needed experimental evidence of its efficacy at varying dosages, when implemented across a range of schools, when delivered in a rural setting, with different school subjects and at different grades or phases. To answer the dosage and phase questions, an expanded team that consisted of Dr Stephen Taylor from the Department of Basic Education, Dr Thabo Mabogoane from the Department of Planning, Monitoring and Evaluation, Volker Schoer and I designed an experiment to test a system-wide remedial version of the GPLMS triple cocktail model. This study was conducted in 2014 in the Pinetown district of the KwaZulu-Natal Department of Education. The results of this study (Fleisch, Taylor, Schoer & Mabogoane, 2017a) showed that the intervention’s overall impact on learner performance was statistically equivalent to the gains made by learners in the control schools. Although alternative explanations were explored, the likely reasons for the limited impact were that the intervention offered ‘too little, too late’, the length of the intervention was too short and that it was difficult to catch up on missed learning by the time children had reached the Intermediate Phase. In 2015, the Early Grade Reading Study (EGRS), the most ambitious experimental research programme ever undertaken in South Africa, was initiated and led by Dr Stephen Taylor, director of research in the Department of Basic Education. As part of this ambitious venture, the study designers used the experiment to test the impact of the triple cocktail model, comparing its impact to a comparable control group, a second group that received a similar model that involved training rather than coaching as well as a parent training model. The EGRS I and thereafter the EGRS II (English as a First Additional Language) provided the compelling evidence we needed to plan system-wide improvement. The team at the Department of Basic Education, Stephen Taylor, Nompumelelo Mohohlwane and Janeli Kotze, need to be acknowledged as pioneers, showing the way in designing and executing rigorous research to solve pressing education problems. The concluding chapters of this book summarise the exciting cutting-edge findings. Chapters 2 to 4 set up the ‘learning’ problem and outline the conceptual framework for change at the instructional core. I begin by rehearsing the key research undertaken in the past decade on the patterns and prevalence of primary school underachievement, and identify new features of South Africa’s bimodal learner performance. Specifically, Chapter 2 points to the limited progress that has been made, the substantial difference between reading in the Home Language and the First Additional Language, and insights from a new generation of research
studies indicating an underlying decoding weakness that anticipates the poor reading comprehension. While there are questions that can be asked about both the cross-national achievement tests and the national evaluation studies, when all the studies are interpreted as a whole, a troubling picture emerges. Chapter 3 reviews government’s attempt to use various national policies to improve learning outcomes. These include policy interventions aimed at teacher capacity-building, curriculum reform, institutional accountability, financial incentives and the provision of educational materials inputs. While the South African education system has stabilised over the past two decades, the chapter explores why the many well-intentioned policies have had only limited impact on entrenched instructional practices and, by extension, failed to narrow the achievement gap between fee and no-fee schools. But why has policy failed? The chapter develops an argument that the problem with national policy as an agent of change is that its policy planners fail to find the right lever to nudge (or rupture) the system’s ‘instructional core’. This idea is at the centre of this book — the recognition that the core of the education system is not made up of distinct components such as teachers, textbooks and time, but a combination of these to make up ‘instructional practices’ that manifest into millions of lessons, activities and tasks involving teachers and learners around content while using materials. The conceptual pivot towards an analytical ‘instructional practice’ as the proximal cause of learning reveals the limitation of the two main change theories, that is, input/outcome and school/teacher effectiveness.

What exactly is instructional practice? How does it manifest in the South African context? Drawing on little-known but highly innovative qualitative research studies, Chapter 4 paints a composite portrait of two distinct types of ‘instructional practices’ to be found in early grade classrooms in South African schools. The first is the instructional practice that is predominant in most ‘no-fee’ schools in townships and rural schools around the country. Although often associated with ‘rote learning’ or the ‘rote rhythm method’ (Macdonald, 2002), it is actually a much more complex practice. The practice is evident in the early grade teaching of reading in African languages. It often begins with the teaching of letter names and a syllabic approach (ie ma-me-mi-mo-mu) and moves on to letter sounds, simple words and sentences. Reading books are introduced only in the second and third year of schooling. Few texts are taken home and there are almost no opportunities for young children to experience independent reading of children’s storybooks. While ‘big books’ have been added to this instructional practice, they are more often than not used for rote whole-class chorus reading. Most of the actual reading activities
involve choral or chorus reading aloud, copying from the board and filling in worksheets.

Many of the studies reviewed point to the pervasiveness of the practice of choral reading aloud, not only in the Foundation Phase but also in the Intermediate Phase. If, as Elmore asserts, instructional practice predicts academic performance, then children would do well in a test that asked them to repeat a word or sentence that has been spoken orally. Children with little experience and few skills in independent reading and meaning-making with texts would struggle with test questions requiring these competencies. There is an important exception in workingclass and rural schools, pertaining to the reading skills of a small group commonly referred to as the ‘clevers’, or precocious readers. These children are singled out to become the public readers, children who would be ‘readers’ in public events or for outside visitors.

The other type of instructional practice is predominant in former white, Indian and many coloured schools. The early grade instructional practices associated with teaching literacy in these schools involve the combination of core methodologies, such as synthetic phonics, teaching high-frequency words using the ‘look and say method’, building fluency using decodable texts, basal or levelled reading series, and opportunities to do independent reading. The graded or levelled reading schemes, such as the Ginn New Reader 360 or Oxford Reading Tree, are often the core educational materials central to this instructional practice. These schemes or series consist of sets of small books organised from simple to complex, and designed to match the reading levels of individuals or groups within a classroom. Children move up levels (colours or numerical value from 2.1 to 2.2) over the duration of a year of instruction or even across grades. Along with these series, teachers in these schools use commercial phonics programmes such as Letterland and Jolly Phonics. Foundation Phase teachers in these schools have been trained as early grade teachers, and are familiar both with the theory and use of the techniques of teaching early grade literacy.

Over the past half century, a variety of innovations have become mainstreamed in this instructional practice, including the use of shared reading techniques and authentic texts for independent reading. Home-based support plays a key role in helping to support young children to develop fluency. This instructional practice requires class teachers to assess all children on a regular basis, assign them to reading groups, identify the most appropriate levelled readers and monitor progress.

During the last four decades there have been many initiatives, both government and NGO, that have aimed to transform instructional practice and improve reading
outcomes in township and rural primary schools. Chapter 5 analyses the lessons learned from these efforts, drawn from published accounts. One of the key insights from the review is how little each successive intervention improved on the successes and the failures of the ones that came before. While there is a history of innovation in reading programmes and initiatives, there was little real effort to rigorously evaluate what worked, or to build on and advance promising practices.

At this point in the book’s narrative, there is a shift in gear. The second half of the book provides the background, the theory and the empirical evidence of a new approach to change at the instructional core. This new approach, called a structured pedagogic programme in the international literature (Snistveit et al, 2016), has come to be called the education triple cocktail in South Africa. This theory is confirmed by empirical evidence from experimental research and large-scale implementation that represent knowledge advances in the field of educational change. The set of propositions or hypotheses that set out to explain the mechanics of change are tested by actual data from the real world.

Drawing on change theory generated from leading thinkers in the field and change experiences around the world, Chapter 6 outlines the theory of action that guided the original intervention, which was designed to change the instructional core of early grade reading in township primary schools. It was this theory of action that animated the series of field experiments in the Reading Catch-Up Study and the Early Grade Reading Study over the last five years. Chapter 7 goes into detail about the first effort to rigorously evaluate the triple cocktail theory of change. As with any experimental programme, setbacks become the springboards.

Chapter 8 summarises the compelling evidence for the educational triple cocktail, beginning with the results from the regression discontinuity design/natural experiment in Gauteng and the comparative interprovincial verification, the Annual National Assessment statistics in 2014, and ending with the results of the Early Grade Reading Study in North West and Mpumalanga.

The contribution to the field of educational change can be summarised in the following propositions:

- There needs to be a strong alignment between official curriculum and the new instructional core.
- External standardised assessment systems are not essential, especially in an environment of low trust.
- The focus of change must be on instructional practice itself, not on a signifier or indicator of instruction.
• When working with the new instructional core, it must be understood as a set of learning activities and tasks that require teachers to take on new routines, new skills and new knowledge, and that it requires the provision of new and appropriate educational materials.

• The old and new instructional core is observable in the activities and tasks children actually do.

• The activities and tasks together constitute the instructional practice. It is this practice (collection of activities and tasks) that drives improved academic performance.

• Change at the instructional core is first about putting in place new routines or daily practices. In most cases, shifts in teacher beliefs and knowledge follow.

• School leadership (the role of heads of departments and principals), district support and monitoring and ongoing improvement are critical for institutionalising and sustaining the new instructional core.

• The educational materials are driven by a coherent and evidence-informed new instructional core. In the case of Foundation Phase literacy, this includes coherently and consistently supplying educational materials for all aspects of literacy development, ie graded readers, phonics programmes, books for independent reading and workbooks for writing.

• In order to assist teachers in the change processes, the educational materials need to be prescribed.

• The learner materials have two distinct purposes: they provide the basis for activities and the tasks, but they also are key to the teachers who are learning the new routines and new core methodologies.

• Teachers beginning the change journey with the new educational materials need just-in-time, lesson-specific training. Once on the journey, teachers also need to understand the big picture, the theory that sits behind the new instructional core.

• Along with just-in-time training, teachers need one-on-one instructional coaching. The purpose of coaching is to provide guidance and direction on the new practice, but coaching has an equally important role in providing emotional support as teachers leave their old practice behind and begin to adapt to the routines and rhythms of the new practice.

• As interventions move towards system-wide implementation, there is a need to
standardise the practice of the coaching itself.

• As the new instructional practice begins to show signs of success, teaching becomes more rather than less demanding. This is because the gap between stronger learners and weaker learners widens, and teachers have to contend with this widening in class differences.

• Once the technical aspects of the new instructional core begin to settle, the secondary systems that reinforce the older system of instruction need to be activated.

• These include how schools work with parents; how educational materials are managed and budgeted for; how teachers assess individual learners; the tools for such assessment and the record-keeping; and, more broadly within the school, the human-resource planning and class-size management.

• System managers need to recognise and plan for differentiated teacher responses to change at the instructional core, and plan strategies for early adopters, the compliant middle and the active resisters. The instructional core is dependent on teachers in the compliant middle institutionalising the new practice.

Change at the instructional core must begin by conceptualising a new core instructional practice. In this context, the new instructional practice largely draws on a dominant national and international instructional practice, which has both a strong base in terms of academic knowledge and extensive examples of effective practice widely distributed around the country. While it may be that the construction of the new instructional core is not a single event, it is central to the change process. The new instructional core then needs to be built with resources, materials or learning tools.