

Teacher Knowledge and Professional Development

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Introduction

There is growing consensus in international and local literature that, to be effective, professional development activities (PDAs) should be focussed on ways of teaching that improve learners' learning. As Welch puts it: "if professional development is not centred on the link between educator skill and knowledge and student learning, it cannot be said to be working" (2012, p 2). This claim sounds simple and obvious, but what it means varies greatly between programmes. PDAs differ in the *form* in which teacher learning is organised - duration and pacing of teacher learning, the types of resource material and artefacts selected to engage teachers in the learning process, the site of learning, and participant selection criteria. PDAs also have different *teaching foci* which refer to the content of the programme (Cohen and Ball, 1999; Elmore, 2002).

The literature on teacher development has not reached a clear consensus on the form and teaching focus of PDAs. A strong reason for that is that classroom-based research cannot yet establish what forms of teaching and learning have most impact on learner achievements. A recent review of classroom-based research in South Africa (Hoadley, 2012) suggests that a few factors - on the basis of their consistent appearance across the reviewed studies - seem associated with learning gains: a focus on reading and writing text, teacher proficiency in the language of instruction, greater curriculum coverage, greater content exposure by cognitive demand, flexible pacing appropriate to learner ability, appropriate assessment and feedback to learners, all of which assume that sufficient teacher knowledge exists.

This chapter is a review and preliminary analysis of what the Report of the Ministerial Committee of Teacher Education (DoE, 2005) classifies as 'employer-driven' PDAs. It focusses on PDAs provided or funded by the Gauteng Department of Education (GDE) on a significant scale.¹

Our review identifies 2009 as a turning point in the GDE provision of PDAs. Until then, most PDAs were targeted, in some way or another, at the improvement of a few discrete aspects of teacher practice, in a context of redress and an under-specified curriculum framework. Around 2009, the GDE turned towards standardized lesson plans, with scripted teaching practices and assessment tasks, as the main tool of teacher support for learners' improved learning. This shift in the provision of more explicit opportunities to learn was first found in the Department of Education's 2008 Foundation for Learning Campaign, then in the more specified curriculum (with the Curriculum and Assessment Policy Statement – CAPS) and, in the case of the GDE, in detailed guidance to help primary school teachers transmit the curriculum.

Our claim is that the GDE made the shift to lesson plans a principled one, which became the backbone of a new type of PDAs with different teaching foci and forms. This was an interesting, even if controversial, way of proceeding with notable advantages but also some limitations.

This chapter focusses on the PDAs provided by the GDE in these two periods of provision and examines more specifically their teaching foci and organisational forms, the reasons behind the shift around 2009 as well as the lessons derived from each period.

The First Period: up to 2009

Contextual conditions

¹ Some of these PDAs have been completed or terminated while others are still on-going at the time of writing. There are other smaller PDAs that are delivered in partnership with individual experts but these do not form part of this review.

After 1994, the DoE focussed on major policy and structural changes in the education system² and also in the teacher education system (unification, governance and qualification structure). The greatest challenges were at the in-service level because of the wide inequities inherited from the past but also because of the need to support practicing teachers with the implementation of demanding new curricula.³ The new OBE curriculum represented a major break from the norms of teaching that teachers were trained for. Curriculum 2005 (C2005), with its under-specified subject matter knowledge and complex concepts of knowledge integration across the curriculum, discovery learning, school and everyday knowledge, lessons to fit prescribed learning outcomes, confused most teachers. The 2000 Norms and Standards for Educators (NSE) and its specifications of new roles for teachers, and C2005 made high demands on teachers' knowledge, ironically at a time small-scale classroom-based research consistently pointed to serious knowledge gaps in teachers. Most teachers were said to lack proficiency in the language of instruction, how and what to teach, and how to cover and pace the curriculum with appropriate cognitive demand on their learners (Taylor and Vinjevold, 1999; Schollar, 2001).

The other challenge was to address the fragmented and uncoordinated nature of the Teacher Education and Development (TED) system. A Ministerial Committee on Teacher Education was set up and suggested the development of a national framework which would provide coherence, direction and focus to a new teacher education system (DoE, 2005, p 2). Subsequently, the 2007 National Policy Framework for Teacher Education and Development (NPFTED) Act made the DoE responsible for teacher education planning, funding and monitoring and for partnering with universities, NGOs, unions and other approved providers. It formalized

² This chapter is limited to in-service teacher education and refers the reader to the chapter by Motala on the post-1994 policies which discusses the background and post-1994 policy context to this chapter.

³ See the chapter by Maringe for more on post-1994 curriculum changes.

the concept of lifelong professional development with the Continuing Professional Teacher Development (CPTD) system which expects teachers to continuously update and strengthen their professional knowledge (DoE, 2007).

We identified three main GDE-driven PDAs in this period: curriculum workshops; district-based *ad-hoc* training courses and cluster workshops; and more formalised programmes. In reviewing these three sets of PDAs we examine whether the learning opportunities they offered to teachers were in line with the above challenges.

Curriculum-driven PDAs

The training of district officials and teachers about the mandated curriculum (and its three versions of C2005, the RNCS and the NCS) dominated provincial PDAs from 1998 onwards. The focus was on transmitting the philosophy, values and assumptions of the new curricula as well as their rationale. The training consisted of broad orientation workshops to inform teachers about the meaning of the curriculum framework, its new terms and directives, followed by subject-specific workshops for more clarification for a particular learning area and phase. Because of the under-specified nature of the curricula, key ideas of the new curriculum such as integration of school and everyday knowledge, group work, and experiential knowledge were covered in an abstract generic manner. Teacher subject matter knowledge and preferred ways of teaching it, and curriculum sequencing and pacing were totally backgrounded.

The organisational form of this training was as weak as its teaching focus. The organisational form of the cascade model was based on a weak structure (information-dissemination). It adopted a 'one-size-fits-all' approach with poor generic learning material (a few hand-outs). The duration of this compulsory training was limited to 2/3 days per workshop. In terms of its teaching focus, it is clear that most trainers

appeared poorly knowledgeable about the meaning of the OBE-type curriculum or how to translate learning outcomes into lesson plans. Appropriate textbooks and learning material were few and the teaching methodology was top down. Follow-up district work was ineffectual as it was more about monitoring teachers for compliance rather than support them.

The C2005 Review Report (DoE, 2000) noted the inadequate planning of curriculum training. Beyond its long-term recommendation for the training to be part of an integrated teacher development strategy, it identified three issues to address in the short-term, the first two being related to an improved focus:

- learning outcomes and deepening content knowledge in the different learning areas;
- sharpening understanding and use of assessment;
- using textbooks and designing supplementary learning material (DoE, 2000, p 100).

Tight timelines, budgetary constraints and a training cadre with poor professional knowledge made it difficult for the GDE to improve significantly on its curriculum training. The introduction and training of the RNCS and NCS continued to suffer from a similar weak model. Aware of the thin material supplied with C2005, more elaborate – but still general – GDE documentation was produced for the RNCS. This did not stop many teachers and principals from complaining that the material was laborious to read, too generic and unhelpful. Many teachers came out feeling unsupported, overburdened with paper work, frustrated by the ‘one-size-fits-all’ generic approach to curriculum training and the little emphasis on subject matter knowledge, lesson planning, and quality assessment – as recommended by the C 2005 Review Report.

Department- and teacher-driven PDAs at district level

Districts are other sites of PDA provisioning which offered two different types of professional development during this period. The first type consisted of formal courses that focussed on topic-specific knowledge (topics relating to new learning areas such as Economic and Management Science, Social Sciences, Maths and Natural Sciences), learners' barriers and 'softer' skills, such as classroom management, discipline and computer literacy.

These voluntary courses targeted teachers of different knowledge and competence and were of short duration (one to six sessions) and were held outside school hours at district venues. Courses were facilitated by district officials or outside professionals of uneven expertise and with different quality hand-outs, according to a teacher centre-based interviewee. These courses were not conceptualised as part of a continuum of learning with follow-up or more advanced courses. Quality assurance was limited to teachers filling short evaluation forms at the end of the course. The take-up by teachers and the alignment between the courses' aims, design and delivery were not monitored.

The second type of district-based PDAs involved less formal cluster meetings which were context-based, classroom-situated, improvement-oriented and more 'teacher-owned'. District officials, teacher leaders or outside professionals facilitated reflections around selected problems of practice. Initially, districts were encouraged by the GDE head office to use the cluster system to train teachers on common tasks for assessment. Soon, they became platforms for teachers to share best practice and/or problems with a view to generating concrete ideas for improvement.

Researchers have compared cluster meetings to communities of practice which, they argue, have the potential of deepening aspects of teacher knowledge and practices, if certain pre-conditions exist. Conducive factors include a structured focus, appropriate learning material, reasonable duration, leadership and professional quality of facilitators as well as

teachers' commitment (Brodie, 2013). The assumption here is that, by reflecting together, with professional facilitation, teachers can learn from context-specific problems, learners' errors, and about topic-specific teaching strategies. There is a debate, though, on whether school-focussed learning can make a substantial difference in teachers' knowledge, and if so, at what depth and breadth.

These workshops were organised by district advisors and gathered teachers from neighbouring schools to a close-by venue. A few organisational weaknesses can be noted. Because cluster meetings did not have access to financial resources to attract quality facilitators and assist teachers to meet, these were not easy to sustain over a long period. There was also the absence of a reliable mechanism to identify teachers' priority needs. District officials struggled to prioritize the knowledge areas teachers needed support on. Their school work was more about monitoring policy compliance than about what teachers needed most to engage more fully with the curriculum.

The other source of identification of teachers' needs was the teachers themselves but this had its own challenges. The 1998 Developmental Appraisal System (DAS) - and later the 2003 Integrated Quality Management System (IQMS)-were intended as appraisal policies which would preface teachers' development needs, as identified by teachers with their peers and senior managers. The few classroom teaching criteria emphasised in the IQMS included curriculum knowledge such as lesson planning, preparation and presentation and learner assessment. Interviews suggest that the IQMS implementation was problematic for two reasons. First, many teachers were reluctant to disclose their knowledge backlogs because of fear that an authentic appraisal of their weaknesses would be used judgmentally against them. Second, most districts were unable to respond to teachers' development needs with meaningful PDAs. In short, the IQMS did not gather reliable teacher-driven data to be able to plan systematically for the provision of PDAs.

There were a few exceptions to this trend. Managers of a district teacher development centre explained how they became pro-active and went beyond the IQMS returns to diagnose teachers' basic needs. They identified phonics as an important knowledge gap in primary school teachers and as an essential prerequisite to the implementation of the new curriculum. Its phonics course became among its most popular courses (de Clercq, 2010). The centre also developed a solid management information system and managed to provide relevant quality PDAs.

Qualification-driven PDAs

As mentioned above, tertiary institutions were asked to offer longer formalised upgrading qualification programmes to poorly qualified secondary school teachers. The NSE stipulated three different purposes to these programmes: reskilling teachers and changing their teaching specialisation; upgrading teachers' existing content knowledge and competence; and obtaining an academic qualification to pursue further research study.

The CHE report (2010) notes that tertiary institutions faced conflicting considerations in finalising the teaching focus, content level and scope of these qualifications.⁴ Tertiary institutions were expected to offer an academic focus in line with the demands of the NQF Level 6 qualification programme. But, in the growing climate of curriculum compliance and with the backlogs in proper curriculum training, most teachers had much narrower expectations. Many teachers who enrolled into these programmes were looking for the practical competence of teaching the NCS curriculum (CHE report, 2010). Moreover, education departments wanted to upgrade poorly qualified teachers whose knowledge and competence differed greatly but could not provide a needs analysis research to inform the institutions about where to start or what to include in the programme (Adler, 2005).

⁴ With the introduction of the NSE, the name of the qualification changed from Further Diploma of Education (FDE) to the Advanced Certificate of Education (ACE).

Such tensions created a difficult balancing act for tertiary institutions. In Gauteng, the objectives of the FDEs and then the ACEs (offered by six universities) were set ambitiously to broaden and deepen teachers' subject knowledge, subject knowledge for teaching and the improvement of teachers' reflective abilities (Adler and Reed, 2002).

In 2003, eleven mathematics ACEs, offered to secondary school teachers in five provinces were researched by the Quantum Project (Phase 1) which examined the kind of mathematical and teaching knowledge offered in the formal assessment tasks of these ACEs. The analysis concluded that subject mathematics knowledge, or what it calls 'compressed' mathematics, was privileged at the expense of the teaching of mathematical problem-solving. Adler (2005) argues that subject knowledge for teaching was most needed to unpack the subject matter for learners, as most of them had serious content knowledge backlogs. Research suggests that course designers found it very challenging to reach a balance between systematic teaching of academic concepts and guiding teachers on their school-focussed group activities and individual assignments (Steinberg and Slonimsky, 2004). This kind of balance required extensive feedback to teachers and support in integrating academic knowledge with school-based knowledge. A more recent review of fifteen mathematics ACEs, conducted by the CHE (CHE, 2010), made some different points.⁵ According to the report, the quality of these maths ACEs' design, module content, assessment and delivery modes varied widely with many of their learning objectives not reflecting the DoE objective for the qualification. The CHE's main conclusion was that most ACEs became *de facto* 'locked into the school curriculum': they privileged the practical competence of teaching the curriculum, they under-emphasized subject matter knowledge and subject knowledge for teaching and did not attain NQF level 6 learning outcomes (CHE, 2010; NEEDU 2013).

⁵ Most large scale evaluations of teachers' upgrading programmes appear to have focused on the maths specialisation.

Organisationally, ACE programmes also differed significantly. Under-qualified teachers were the target and state bursaries as well as a once-off monetary bonus were provided to incentivise teachers. The mixed mode of delivery varied, with some programmes offering distance learning while others had classes during school holidays or every week. The quality of contact sessions and learner support also differed. Classes varied from 50 to 100 and facilitators were permanent teacher educators or contractual staff.

The impact of such upgrading programmes on teacher learning is difficult to establish. Only a few impact studies have been conducted on the FDEs/ACEs in Gauteng. Apart from an impact evaluation study of five ACEs in Educational Leadership⁶, there was a 3-year research project undertaken on the impact of the FDE programmes in English, Maths and Science on teacher learning (Adler and Reed, 2002). This research points to the methodological complications of assessing teachers' take-up. Because teachers have so many diverse and unexpected ways of engaging with the course and using it to enhance their practice, it is difficult to identify exactly the aspects of course content which teachers attempt to use and apply into their teaching. The take-up in the FDEs was said to be greater amongst teachers with a better knowledge base, as Adler (2010) mentions:

Our analysis pointed to unintentional deepening of inequality. The 'new' curriculum texts selected by teachers from their coursework and re-contextualised in their classroom practice, appeared most problematic when teachers' professional knowledge base was weak, and typically, this occurred in the poorest schools (p5).

Evaluations of other formal upgrading courses often note that the least qualified teachers often do not complete upgrading courses and/or do not benefit as much as other more qualified teachers.⁷

⁶ See Bush's chapter for more on this.

⁷ A JET-commissioned evaluation of the 4-week in-service teacher training courses in English and maths, provided in 2010 by the Cape Teaching and Leadership Institute, found out that teachers from relatively better

Lessons Learnt

It appears as if there were small pockets of quality in the GDE-driven PDAs of this period. But, there was great fragmentation, lack of coordination and focus on teaching improvement. PDAs were often driven by the immediate needs of teaching the new curriculum but without being linked to teachers' specific priority development needs. PDAs lacked strong conceptualization and internal coherence. This may partly explain why, in this period, many teachers, especially those from under-resourced and poorly performing schools, continued to complain of being under pressure to comply without much access to meaningful opportunities to learn (Shalem, 2003)

Three main lessons can be derived.

First, PDAs conducted as a discrete set of activities, self-teaching on the job, short courses and *ad hoc* once-off workshops do not work. Professional development needs to stay focussed on a limited number of objectives *for improved teaching practice* over a long time. This means that PDAs need a strong teaching focus with in-built support and monitoring measures to ensure that teachers use some of what they learnt to improve their practices.

Second, employer-driven PDAs are structured by a fundamental tension between employers' interest to implement the mandated curricula and the specific priority knowledge needs of teachers. Most of these PDAs emphasised the general curriculum knowledge and practical competence needed by teachers to implement the curriculum policy, but not the subject matter knowledge and subject knowledge for teaching which teachers needed to deliver effectively the curriculum of their phase.

Third, PDAs have to be conceptualised rigorously and with a strong alignment between the problems they deem important to address and

performing schools benefited most from the courses. Sci-Bono and MGSLG mentioned a similar point with the teacher workshops of the Teacher Development Strategy of SSIP (see later).

teachers' learning needs. A reliable needs analysis based on a sound management information system will help identify priority needs and problems. A conceptually tighter content design and a delivery that avoids a 'one-size-fits-all' approach will be more suitable for teachers of different knowledge needs. Lastly, evaluation for improvement of outcomes has to be a permanent feature of delivering a PDA.

The Second Period after 2009

Our questions in reviewing this second period of GDE-driven PDAs are simple: what exactly changed, what remained the same and why?

Contextual conditions

After the 2009 elections, the work of national and provincial education priorities became increasingly dominated by the 'equity' mandate. By then, clear evidence was available from systemic evaluation results that the performance of learners from poor schools pulled down average provincial and district aggregated performance. This prompted the DoE and PDEs to develop new programmes 'to get learning right' and deliver quality education to all. Given the concern that formal upgrading courses had not been cost-effective in improving learner achievement, the idea of scripted material for teachers to follow when they teach became an increasingly prominent feature of PDAs in this period.

The year before the 2009 election, the DoE had instituted the Foundation for Learning Campaign, a four-year national programme to improve the teaching and learning of primary literacy and numeracy and to increase the average learner performance to more than 50%. It provided schools (especially underperforming primary schools) with more explicit guidance with daily lesson plans, textbooks and materials to improve teaching and assessment practices. This type of thinking was also found in the 2009 Report of the Task Team for the Review of the Implementation of the National Curriculum Statement (DBE, 2009) when it recommended

greater specifications in the curriculum content, sequence and pacing. The President's 2010 'State of the Nation Address' emphasised a similar point:

Our education targets are simple but critical. We will assist teachers by providing detailed daily lesson plans. To students, we will provide easy-to-use workbooks in all 11 languages

By the time the CAPS documents were published in 2010, it became clear that the now-renamed Department of Basic Education (DBE) wanted to streamline the NCS requirements and support teachers by providing them with an outline of topics to be covered each week for each grade. Streaming the work of teachers through the new curriculum included specifications of teaching content, activities and assessment tasks for the curriculum topics selected for the grade.

As far as the general organisation of teacher education was concerned, the DBE and the Department of Higher Education and Training (DHET) had been under pressure since the 2009 Teacher Development Summit to produce a concrete teacher development plan. In 2011, the Integrated Strategic Planning Framework for Teacher Education and Development (2011-2025) was published. It aimed at improving teacher professionalism, in particular teachers' subject knowledge, knowledge of teaching and teachers' computer literacy skills. This first integrated strategic plan was to guide more systematically provincial PDAs on how to address teacher development needs on a continuum of learning and in articulation with other professional development interventions. Funds were to be allocated for specific outputs and activities to be produced by provincial teacher development institutes, district teacher development centres, professional learning communities (PLCs) and unions' professional development institutes (DBE/DHET, 2011). Implementation of such plan seems to be rather slow, mainly because of budgetary constraints.

In its Action Plan to 2014, the DBE made it clear that it wanted increased percentage targets for Grade 3, 6, 9 and 12 learners in language and

numeracy competencies. These national targets and interventions influenced the GDE in its own Five-Year Strategic Plan, 2009-2014. The new MEC for Education in Gauteng, Barbara Creecy, noted the weak performance of primary schools: "learners in grades 3 and 6 are functioning at least 2-3 grades below their expected levels in education" and..."can technically only answer 28% of the questions expected in the National Curriculum" (GDE Strategic Plan - 2009/2010 and 2013/2014, p21-23). She wanted all GDE-driven PDAs to aim at an increase in learners' performance (especially in poorly performing schools) and the GDE system and its districts to align their work to assist with these better performance targets. In order to achieve this alignment, the GDE required districts to inverse the time they spend with schools (from 80%- 20% monitoring-support to 20% -80% monitoring-support).

Although many factors are shown to contribute to low learner performance, in the Five-Year Strategic Plan, the MEC emphasised low teaching quality and poor curriculum coverage (particularly in the poorest parts of the province) as well as the challenges teachers face in translating the content of the curriculum into a work plan and even more specifically into a coherent lesson structure. The MEC appeared to indicate that, from now on, PDAs had to provide teachers with more explicit guidance in their site of practice.

The following sections examine how the main GDE-driven PDAs tightened their teaching foci and organisation in the post-2009 period. In our analysis, we focus on three PDAs: CAPS training, the Teacher Development Strategy of the SSIP (Secondary School Intervention Project) for secondary schools and the GPLMS (Gauteng Primary Language and Mathematics Strategy) for primary schools. The last two PDAs are large-scale improvement strategies specific to the GDE, which targeted teachers from under-resourced and under-performing schools.

CAPS Orientation Training: General Curriculum Knowledge and Lesson Plans

To improve on its curriculum training, the DBE decided to develop more elaborate training material gathered in a 'thick file'.⁸ The idea was that all national and provincial training would rely on the file to ensure greater consistency and minimize distortions or misinterpretations down the implementation line.

The GDE orientation training covered broadly the content of the thick file through two workshops, as with the previous curricular orientation. In the first orientation workshop, teachers were introduced to general curriculum knowledge such as the new terms, topics, subject time allocation and their rationale. In the second subject-specific workshop, teachers were provided with an opportunity to understand CAPS in the context of their subject area and phase. The 'thick file' included subject and phase-specific schemes of work with examples of topics to cover each school term. It also contained a sample of lesson plans with teaching and learners' activities, assessment and homework to be covered in those lessons and the specific order to be followed.

Since CAPS was phased in over three years, the mandatory training started in 2011 with teachers of the grades targeted for the CAPS implementation the next year. Organisationally, the same cascade model was used. The DBE trained a few facilitators from the GDE and its districts and the MGSLG (Matthew Goniwe School of Leadership and Governance) was made responsible for CAPS training coordination and management in Gauteng. The MGSLG organised Train-the-Trainer workshops for subject advisors and 1,400 lead teachers who, in turn, provided CAPS orientation to teachers of specific subject and grade over a 2/3-day workshop. Although the MGSLG reports indicate good teacher attendance, no evaluation was done on the quality of facilitators and material or the way

⁸ This term was used in interviews by different GDE officials and school personnel.

teachers responded. District subject advisors were expected to supplement these workshops with their own training of small groups of teachers doing the exercise activities suggested in the file.

A novel decision was to supplement the general curriculum training with the provisioning of standardized lesson plans for each subject and grade. These detailed lesson plans were not compulsory but were to assist GDE districts in monitoring the curriculum coverage and pacing in schools. These were the responsibility of the MGSLG which outsourced them to various professional service providers and experts. A quality assurance process was put in place and, at the time of writing, these lesson plans were put on CDs and supplied to all schools.⁹

The Teacher Development Strategy (SSIP): Learning to Teach Better with Lesson Plans

The GDE SSIP intervention was introduced in 2010 for the FET (Further Education and Training) phase of under-performing secondary schools that achieved less than 80% pass rate in the National Senior Certificate examination. In 2011, it became a multi-pronged integrated programme targeted at FET teachers from 390 under-performing secondary schools. There were two main components to this PDA: the provision of lesson plans with standardized common tests and pace setters and the Teacher Development Strategy. The aim was to ensure that teachers deliver the curriculum more effectively by providing them with year plans, work schedules and daily lesson plans. These were intended as guides to support “work in a structured, organised and professional manner” so that “learners receive a quality classroom experience and achieve improved results” (MGSLG website). The scripted lesson plans specified the topics, objectives, learning and teaching resources needed to be covered in each day of the school terms. The lesson plans were designed around tightly timed teaching and learners’ activities, assessment and exercises. Hard

⁹ Some interviewees argued that these first lesson plans were not always CAPS-aligned.

copies were provided to underperforming schools while a CD resource pack with lesson plans was made available to all schools. The lesson plans were not compulsory and there was no monitoring of their actual use in classrooms. As with the CAPS lesson plans, the SSIP lesson plans were not accompanied by aligned textbooks and other learning and teaching resources. They were introduced to teachers of SSIP schools through three or four workshops which focused on specific curriculum topics in their subject areas. The topics had been identified by district subject advisors and from an analysis of FET exam moderators' reports and ANA test results.

Organisationally, the GDE delegated the design, delivery and management of this teacher support programme to two section 21 companies. The MGSLG was responsible for the gateway subjects of Accounting, Geography, History, Business Studies, Economics, and Languages, while SciBono managed the Maths and Science subject areas. The programme, which consisted of one-day contact training session per term for each FET subject, was facilitated by teacher leaders who were hired by, and accountable to, the MGSLG and SciBono. Workshop trainers were given some training of what they had to cover before the contact session. District advisors monitored the training and acknowledged the uneven quality of trainers, some of whom had to be replaced.

Similar problems in the design and delivery of the programme surfaced. The lack of a viable information management system on what teachers needed, the difficulty in finding quality teacher leaders and the complex logistics of coordinating training sessions all contributed to the uneven quality and relevance of the training offered. According to Sci-Bono, better teacher attendance occurred when district advisors displayed a strong work ethic and authority over their teachers. SADTU complained that these training sessions abused the ELRC-stipulated maximum 80 hours of PD and teacher attendance started to decline, with only the more committed and usually more knowledgeable teachers completing the

programme. The poor teacher attendance combined with high delivery costs led the GDE to discontinue this programme in mid-2012.

According to Sci-Bono, MGSLG and the GDE, the current thinking is to move away from formal training courses and provide instead teacher support through more innovative methods based on technology, audio podcasts and interactive video lessons.

The GPLMS: Learning to Teach with Compulsory Lesson Plans, Coaches' Support and Monitoring

Arguably the most innovative and longest PDA in this period is the Gauteng Primary Language and Mathematics Strategy (GPLMS), a four-year literacy and numeracy strategy targeted at more than 800 under-performing primary schools (65% of the GDE primary schools) that scored below the provincial and national averages in assessment. The aim of this specific GDE strategy was to increase the Grade 3 and 6 pass rate from below 40% to at least 60% by 2014 (GDE, 2010). Its focus was on improving the teaching of languages and mathematics at Foundation and Intermediate Phases and on reducing the gap between the intended and enacted curriculum. The programme is known specifically for compelling teachers to follow standardized daily lesson plans. Designed and developed by professional experts to improve the pacing and coverage of the CAPS curriculum, lesson plans constituted the most important component of this intervention. Each lesson detailed a curriculum topic, concepts and content, and prescribed tightly-timed teaching steps and activities as well as learners' exercises and assessment to be completed by teachers. The assumption was that, by following standardized lesson plans, teachers would adopt a new repertoire of teaching and assessment practices and eventually acquire more appropriate teaching routines in line with the curriculum demands.

One of the novelties of the GPLMS was its commitment to forge a strong alignment between its different components as well as between its design

and organisational arrangements. The alignment (around detailed lesson plans) and the integration of the GPLMS components (learning and teaching resources, coaches and management) facilitated the roll-out and implementation. Started with Foundation Phase languages, it was extended later to the Intermediate Phase and mathematics in both phases. GPLMS schools were provided with quality literacy resource packs, a set of graded readers, learner workbooks and learning materials, which were all aligned to the scripted lesson plans. The learning outcomes of this programme were to be monitored over time through the ANA Grade 3 and 6 results. Around 480 coaches were appointed by twelve literacy and mathematics NGOs to work with 12 000 teachers and their 750 000 learners. The main role of coaches was to assist and ensure that teachers understood and followed the lesson plans. Each coach worked in six or more schools and, according to their phase specialisation, was responsible for 35 to 45 teachers who were visited once or twice a week, depending on their progress. Coaches provided 'just-in-time' training once a term, school-based workshops as well as on-going support for, and monitoring of, teachers' delivery of lesson plans. They modelled lesson plans in the classroom, observed teachers enacting them and were allocated a senior supervisor for support and monitoring. The GPLMS management, in charge of lesson plans and additional resource material, decided on an iterative revision process for improving lesson plans. On the basis of feedback from teachers, coaches and quality assurers, the appropriateness and quality of lesson plans was improved, something that never featured in other PDAs relying on lesson plans.

The intervention was, however, labour-intensive and expensive with its personnel and non-personnel expenditures amounting to more than R300 million per year. It was difficult to sustain for a long time such a costly and labour-intensive programme, especially with budget constraints. The extent to which the GPLMS can lead to significant improvements in teachers' practices and learners' achievements is being assessed

quantitatively through an examination of the change in ANA results (Fleisch, 2013) while some small-scale studies indicate promising changes in some schools with some coaches (Masterson, 2013).

De Clercq's analysis (2013) shows that this standardized approach to teacher learning encountered some challenges. First, some coaches were not able to assist teachers adapt lesson plans to their classroom context because their quality was uneven and not always satisfactory. Reasons for the uneven quality included the temporary nature of GPLMS posts which could not compete with the benefits of permanent jobs, and the fact that there were not that many competent former educators available. Second, some teachers refused to buy into the intervention while others struggled legitimately with the prescribed content and pacing of the lessons, on the grounds that a 'one-size-fits-all' teaching approach does not work for different classroom contexts. Third, the fact that the GPLMS was led, managed and implemented through a structure parallel to the GDE constituted both an organisational strength and weakness. The MEC, who championed the GPLMS, wanted to test a new form of PDA with fully committed personnel, tasked to work solely and flexibly on how to improve the intervention. The problem was that the leadership team, made up of a few temporary appointees from outside of the GDE, did not win the support of many head office and district officials who perceived the intervention as a MEC and not a GDE project. This state of affairs produced tensions between the GPLMS staff and GDE officials (as well as SADTU officials), which manifested at school level with teachers being given conflicting instructions by coaches, district advisors and SADTU (de Clercq, 2013).

The GPLMS leadership argued that bureaucratic controls of highly specified standardized teaching routines, expert-designed learning and teaching resources and on-going support and monitoring by coaches were the best way, at that point of time, to ensure that more school learners were exposed to the intended curriculum (to the expected sequence,

spacing and coverage of the curriculum). An argument was also made that, given the poor impact of most PDAs up to then, it was legitimate to institute preferred (and improved) teaching practices in this manner and to initially run the intervention by outside experts.

At the time of writing, attempts were under way to raise extra funds from the private sector to continue with the GPLMS while others pushed for its institutionalisation in the GDE district and school structures. The idea of institutionalisation is important but does involve serious capacity-building and allocation of realistic workload for subject advisors and HoDs.

Post-2009 Changes

Three points are worth making about this second period. First, there was a significant change in the conception of how teachers learn a preferred and improved practice. After focusing on teacher subject matter knowledge and subject knowledge for teaching, a shift of thinking occurred. Before 2009, GDE-driven PDAs gave teachers opportunities to learn discursively about aspects of the practice of teaching, and, to a smaller extent, aspects of teacher knowledge needed for teaching the curriculum. In this kind of learning, teachers were encouraged to acquire experienced and research-based ideas with the expectation that they would use their discretion to apply or incorporate what they learnt to their practice, in accordance with their understanding of their contexts. After 2009, the novelty is in targeting teachers in their site of practice with detailed paced lesson plans. While the post-2009 PDAs differed somewhat from one another, the GPLMS appears more committed and effective at improving the quality and alignment of its lesson plans and resource materials.

Second, the GDE targeted its PDAs at a specific group of schools whose learners' results were below average and whose teachers were not able to teach according to the standards required by the curriculum. This is in line with the GDE 'equity' mandate and the need to improve average learner

performance by closing the gap between performing and under-performing schools.

Third, the GDE outsourcing of teacher training and support to various service providers with their different methodologies and approaches changed. The design, conceptualisation and delivery of the main PDAs became more centralised. The GDE works more with the MGSLG as its recently appointed teacher development institute and the GPLMS even though outsourced reports back directly to the MEC and the DDG Curriculum Development. Partnership with other training providers continues but only involving typically small scale PDA experimentation.

Teacher Knowledge: Lessons to be Learnt

Selecting a teaching focus for professional development is a challenging task for professional developers. Research on professional knowledge suggests that, to teach well, teachers need a specialised knowledge of what they teach, a broad sense of diverse methods of teaching and, most specifically, ways of explaining and representing the specific content they teach, with the view to imparting it to learners of specific age and cognitive level of development (Phelps and Schilling, 2004; Ball, Hill & Bass, 2005). The overall position that is emerging is that teachers are specialists in what they know because they know it for the purpose of teaching it to others. This is an important point, as most South African teachers teach learners that are twice as challenging because of their school knowledge backlogs, lack of parental assistance, and the poor - at times violent - community contexts from which they come (Shalem and Hoadley, 2009).

Research on teacher knowledge (Shulman, 1986, Rowland and Turner, 2008) defines teacher knowledge specialisation as knowledge of the discipline that a teacher is qualified to teach. This knowledge is complex. A teacher needs to know facts and concepts central to the discipline but also the conceptual structure and the way ideas have been developed by

experts who research the discipline. This is often referred to as discipline knowledge or subject matter knowledge (Winch, 2010).

South African classroom-based research continues to reveal teachers' weak subject matter knowledge. Yet, the NEEDU report (2012) reveals that few PDAs have managed to provide well-designed and systematically-presented formal courses on subject matter knowledge. At the time of writing, we understand that some GPLMS leaders are aware of this and are thinking of providing maths teachers with a 6-module course on the subject matter knowledge of mathematics to deliver the lesson plans more effectively. The lesson plans introduced by the GPLMS, well conceptualised and delivered as they are, are unlikely to produce improvements in this kind of teacher knowledge unless the latter is imparted explicitly and systematically.

International and local researchers agree that subject matter knowledge is necessary but emphasise that it is not sufficient. Anderson & Clark (2012) and Bertram (2011) argue that teachers need also to understand how best to teach the discipline to another, taking account of the requirements of the curriculum. Shulman (1986) and others after him argue that teachers have to decide about the best way to sequence and pace the content they teach, what explanations to give to learners, which examples to select in order to demonstrate concepts and which activities and assessment tasks to provide learners with. This subject knowledge for teaching involves making sound judgments and is particularly important when teachers are faced with misunderstandings exhibited by learners learning new content and have to decide on how to scaffold learners' learning up to the complexity of the task (City *et al*, 2011, p 29). Two different aspects of subject knowledge for teaching¹⁰ can be distinguished:

- Knowledge about ways of organising one's teaching over time. This includes the sequencing and pacing of the content to be covered,

¹⁰ Shulman (1986) was the first to refer to this kind of teacher knowledge which he named "pedagogical content knowledge" (PCK).

using a coherent lesson structure, establishing routines of work, selecting learning material for teaching and designing learning and assessment activities focussed on how to order and structure teaching.

- Knowledge of helping learners to access the knowledge and understand the meanings, rules and procedures of the subject matter.

The GPLMS with its lesson plans, coaches' support and monitoring is a unique intervention regarding the first aspect of subject knowledge for teaching. It is the only PDA that takes care systematically of the teacher knowledge of coverage and pacing, with small-scale research evidence that some teachers are slowly developing more productive teaching routines. This is a significant achievement in terms of framing for teachers a stronger link between the intended and the enacted curriculum.

Helping learners to learn, the second aspect, is far more complicated. Morrow (1994) refers to this as teachers providing learners with epistemological access. In their work on the knowledge needed by literacy teachers to teach reading, Phelps and Schilling (2004) describe an interesting moment, which is useful for understanding epistemological access. Learners, they say, often misrecognise the rules of reading and teachers need the knowledge of teaching letters and sounds to make judgement on how best to help learners follow the rule. In the example below, it becomes clear that the way learners make sense of the rules of 'word recognition' cannot be written for teachers.

All elementary teachers must figure out what to do when students misread words..... How should a teacher respond? Should she tell the student the word, point out some feature of the word, ask the student to sound out the word, compare the word to another, ask the student to consider context, or something completely different? Although these sound like pedagogical choices, it is less obvious ... choosing effectively for a particular word depends, in large part, on the word itself, the type of error and the surrounding text. The capacity to make good teaching decisions or moves rests in part on

the teacher's knowledge of the subtleties of word and text structure (p35).

Here, the teacher is confronted with learners' misrecognition. Correcting the learner by telling her the word would display poor teacher knowledge, in this case poor knowledge of letters and sounds. Teacher knowledge of what readers of different ages do, when they decode the sound of a word, is embedded in the pedagogical choices mentioned above. Sufficiently classified curriculum, schemes of work and lesson plans can *partially* prepare teachers for such teaching challenges. These provide teacher support by pre-empting developmental considerations known in the literature about reading and working these into the resource material that teachers are given to follow. However, they cannot replace solid and coherent professional judgements that teachers need to make in response to these kinds of situations so common in teaching. Appropriate judgement of how close or far a learner is from what is correct is core to teachers providing appropriate assessment and feedback to learners.

The more specified the curriculum and its teaching resources are, the clearer a teacher is about what she needs to cover and how to pace it overtime. But what is also required is *deeper teacher knowledge of subject matter and subject knowledge for teaching* which promote systematic teaching with the capacity to assist different learners to learn. Short courses, informal and formal learning motivated by employers' interest in curriculum legitimation and implementation are not suitable for developing this important aspect of teacher knowledge.

A last point about teacher knowledge and professional development relates to teachers' poor proficiency or superficial fluency in the language of instruction which, South African classroom research indicates (Taylor and Vinjevold, 1999; Schollar, 2001; Hoadley, 2012), is one of the major obstacles to better teaching and learning. It is interesting here to bring Cummins' distinction in language proficiency between basic interpersonal communicative language skills (BICS or conversational language) and

cognitive academic language proficiency (CALP). The former refers to everyday forms of communication and the latter to specialised forms of communication characteristic of formal learning. Included in specialised forms of communication are conceptual operations such as comparing, classifying, synthesizing, evaluating, and inferring, which, although used in everyday language, assume a cognitively far more complex form in formal learning. Without such proficiency in academic language (or CALP), the learning of new content (be it subject matter knowledge or subject matter knowledge for teaching) will be more difficult. The transition from conversational to cognitive academic language can only occur when learners are taught how to perform these kinds of specialised functions in an academic environment. Many of our teachers were not afforded the opportunities to study their home language systematically and their formal study of teaching did not support this transition either. What this may suggest is that teachers' ability to benefit from PDAs, usually conducted in English, will be more difficult for second language teachers, and even more challenging for second language teachers who have not learnt these skills, ideas and concepts in their first language.¹¹

This argument has to be more rigorously tested in further research on PDAs, but suffice it is to say here that none of the reviewed PDAs, which aimed at improving teachers' subject matter and/or subject knowledge for teaching, explicitly mentioned the need to take into consideration and address the poor CALP of some teachers.

Conclusion

As the 2005 Report on Teacher Education mentioned: "where internal capacity [for professional growth] is lacking, there will clearly be a greater need for 'outside-in' strategies of development, ... but with the purpose of growing the professional agency of teachers" (DoE, 2005, p16). So, what

¹¹ For a very interesting attempt of developing student competence in English whilst simultaneously developing their use of their home language for higher order cognitive work, see Joseph and Ramani, 2004.

can be said about the GDE-driven PDAs which target improved teacher practices and agency?

Most PDAs reviewed here expect teachers to grasp the meaning of new ideas or practices suggested and show agency in implementing these into specific classroom context. However, there are no ways of knowing what teachers select to take up and incorporate into their existing practices. Furthermore, the review shows that PDAs offered to teachers are often not systematic or properly conceptually aligned; there is little incremental building of topics between courses, and aspects of subject matter knowledge are only touched on as *ad-hoc* response to some immediate demand or need.

More recently, the GDE decided to experiment with a more systematic conceptualisation and implementation of professional development in poorly performing schools with tightly aligned support and controlling tools (including scripted lesson plans) which make teachers follow prescribed teaching routines. In the process, teachers were exempted (in our view, problematically) from contextualizing and incorporating what they know into their classroom context. It was hoped that, by being exposed to a reservoir of teaching routines, teachers' professional agency would increase and make them confident to learn from the lesson plans the knowledge needed to improve their practice in a way that works with their learners.

However, the question has to be asked: do teachers possess sufficient foundation in subject matter knowledge and CALP to be able to learn more subject matter and subject knowledge for teaching as well as exercise better professional agency? This is the crux of the problem. If, as research continues to show, the subject matter knowledge and the CALP of the majority of South African teachers are weak, systematically presented courses on these will have to be envisaged.

In conclusion, for the impact of PDAs to be significantly felt at the level of classroom practice and learner performance, this chapter makes the following recommendations:

1. Designers and implementers of PDAs have to think carefully about the focus and form of the programme and the relationship between them.
2. There is sufficient evidence to suggest that, in the case of many SA teachers, subject matter knowledge is of great concern. It has been argued here that PDAs which target teacher practice and learner performance cannot compensate for teachers' poor subject matter knowledge. Learning subject matter knowledge is a complex matter which includes, inter alia, learning of facts, concepts, and appropriate methods of investigation as well as learners' misunderstandings and ways of providing epistemological access to learners. Curriculum training and subject knowledge for teaching should be accompanied by a parallel programme which provides systematic courses on subject matter knowledge
3. Accepting the above distinction should also mean recognition of roles and a separation between sites of provision. Whilst the GDE and NGOs are better placed to help teachers re-structure their practice, tertiary institutions are better placed to improve teacher subject matter knowledge; PDAs aimed at improving teachers re-structuring their practice are better done in a school-based form of professional development. Improving teachers' basic subject matter knowledge and CALP is likely to be done better outside the context of teaching. It is our view that recognising specialisation and separation between sites forms the basis for improving the desired collaboration and alignment between parties involved in planning, managing and delivering PDAs.
4. PDAs have to be carefully conceptualised and teacher learning systematically supported with conceptually aligned resource material.
5. Professional developers should ensure sufficient teacher take-up. By incorporating follow-up support and a form of monitoring for teacher

development in the site of practice, professional developers can ensure that teachers are guided in applying the new ideas to improve their practice.

6. In relation to the IQMS design, the ELRC should modify the selected performance standards to include teachers' basic 'knowledge' development needs. However, for this to happen, mutual trust and respect is needed between departments, unions and teachers.
7. In terms of the site, PDAs aimed at improving teachers' structuring of their practice are better done in a school-based form of professional development. Improving teachers' basic subject matter knowledge and CALP is likely to be done better outside the context of teaching.
8. School-based teacher learning, involving the following of lesson plans (and other teachers' material), has important merits and is becoming a popular tool for change, promoted not only by government but also by NGOs (e.g. Zenex foundation), publishers and more recently SADTU. However, criteria for what counts as a good lesson plan should be devised and shared by curriculum specialists so that schools and teachers can choose and use lesson plans with informed judgment

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