



IN DEPTH

TEACHERS IN SOUTH AFRICA



SUPPLY AND DEMAND 2013–2025

Executive Summary

March 2015

The Centre for Development and Enterprise, South Africa's leading development think tank, focuses on vital national development issues and their relationship to economic growth and democratic consolidation. Through examining South African realities and international experience, CDE formulates practical policy proposals for addressing major social and economic challenges. It has a special interest in the role of business and markets in development.

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This is the executive summary of a report based on three background research papers written for CDE by Dr Charles Simkins, Dr Roger Deacon and Dr Peter Robinson. The report was written by Dr Jane Hofmeyr (CDE's Education Policy and Advocacy Director) and Dr Kim Draper (CDE's Education Research Manager).

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The full report, as well as the CDE Technical Report: Teacher supply and demand 2013-2025, are available on the website www.cde.org.za.

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TEACHERS IN SOUTH AFRICA: Supply and Demand 2013–2025

One of the greatest challenges facing the South African education system is the production of sufficient qualified, competent teachers, who can provide quality teaching for all school subjects and phases. Whether South Africa is able to meet this critical challenge is a question that motivated the Centre for Development and Enterprise (CDE) to undertake research on teacher supply and demand.

Three experts were commissioned by CDE to undertake research for this report: Dr Roger Deacon and Dr Peter Robinson, respectively, investigated the public and private provision of initial teacher education, and Dr Charles Simkins modelled teacher supply and demand from 2013 to 2025, using 2012 and 2013 data on public and independent ordinary schools. This CDE report is based on their work and draws out some implications for education strategy and policy. It concludes with a summary of CDE's main findings and recommendations. The full report, as well as the *CDE Technical Report: Teacher supply and demand 2013-2025*, are available on the website www.cde.org.za.

BACKGROUND

Through initial teacher education (ITE) programmes offered at higher education institutions (HEIs) student teachers obtain either a four-year Bachelor of Education (B Ed) degree or a one-year Post Graduate Certificate in Education (PGCE) after a three-year undergraduate degree.

As both of these are four-year qualifications, the current official requirement for a qualified teacher in South Africa is known as M+4, a matric (school-leaving) certificate plus four years of ITE. Until fairly recently, however, M+3 (matric plus three years of ITE) was the official requirement, and so most teachers in the country are qualified with M+3.

However, a *qualified* teacher is not necessarily a good teacher. Not all qualified teachers are competent professionals able to provide quality teaching and learning. It is common cause that the quality of most ITE programmes leaves a lot to be desired and the result is that most of the current teaching force has been inadequately educated and trained, whether during apartheid or in the recent past.

MAIN FINDINGS

CDE's research and modelling covered extensive ground so only the main findings are summarised below.

Government Strategy

- **Significant development:** Government's 2011 *Integrated Strategic Planning Framework for Teacher Education and Development* (ISPFTED) was launched with its primary outcome "to improve the quality of teacher education and development in order to improve the quality of teachers and teaching".¹ This provided a clear strategy and plan that was accepted by all stakeholders and covered the full scope of

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teacher development. Both quantitative and qualitative challenges were identified. However, there are certain weaknesses in the Plan: the lack of measurable deliverables and specific annual targets, a model of expansion based on the existing models of ITE at public higher education institutions (HEIs) which excluded new and innovative approaches, neglect of professional development for teacher educators, and a lack of attention to the role the private sector could play in the future.

- **Progress in achieving the goals of ISPFTED:** The two national education departments have made impressive progress in achieving the short- and medium-term quantitative goals of the ISPFTED through expanding ITE provision at public HEIs and achieving significant increases in enrolments and graduates, as outlined below.

Government has also begun to address the quality challenges by implementing the policy on *The Minimum Requirements for Teacher Education Qualifications* (MRTEQ) in 2011. This requires all ITE programmes to be re-designed with particular emphasis on subject content knowledge, how to teach that content knowledge, and the practice teaching component. To date 73 per cent of ITE programmes have been approved by DHET. It has also allocated additional funding to public HEIs to strengthen their ITE programmes and co-funded new research investigating the quality and relevance of ITE programmes at five public HEIs.

Teacher Supply and Demand until 2025

Five datasets were used to construct the CDE model.² This proved to be a complex and laborious task because the various data sources are inaccurate, incomplete, and inconsistent in what they include. Education researchers encounter numerous data problems. Typically education databases are unreliable because the data is not entered correctly or is incomplete, or it is out of date. None of the datasets used for the CDE research agree on key issues like the number of teachers or Grade R enrolments.

In addition, in some years government reports include certain important data and then in other years this is omitted. For example, in 2012 KwaZulu-Natal (KZN) returned no Annual School Survey (ASS) data on educators to the Department of Basic Education (DBE). As KZN is the province which has the most learners and employs the greatest number of teachers, this presented a significant challenge for the modelling. Consequently, CDE has had to spend considerable resources to try to unravel the inconsistencies and reconstruct missing information.

Furthermore, at the time of the CDE research, access to the primary Personnel and Salary System (PERSAL) database was not granted on the grounds of the confidential nature of teacher information. Because CDE had primary data from the ASS of the DBE and it allowed us to analyse data by age, which the available PERSAL data did not, the findings reported are based mainly on the ASS analysis.

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The data challenges notwithstanding, the CDE model provides important pointers to teacher supply and demand in the next 10 years and the key dynamics that will influence it. In addition, CDE's research identifies the main patterns and trends in the teaching force, and their implications for the future.

Teacher demand

Recent birth rates, learner enrolment rates and estimated learner promotion, repetition and dropout rates were factored into the CDE model to project future demand.

- **Increased learner enrolments:** These are expected to rise from some 12.4 million in 2013 to 13.4 million in 2023, after which they will decrease to 13.3 million in 2025. However, growth in learner enrolment will not be smooth owing to unexpected dips and peaks in birth rates and uneven learner progression through the system.
- **More teachers required:** To meet the increased learner enrolment, the teaching force will need to expand from around 426,000 in 2013 to around 456,000 in 2025, an increase of approximately 30,000 teachers over 12 years.

Teacher supply

- **ITE provision dominated by three universities:** The University of South Africa (UNISA), the University of KwaZulu-Natal (UKZN) and North-West University (NWU) account for about 60 per cent of all ITE enrolments and nearly half of all graduates.
- **Significant increases in ITE enrolments and graduates:** Between 2009 and 2012, ITE enrolments rose from 35,937 to 94,237, a 160 per cent increase, as a result of the efforts of the national departments of education to expand the provision of ITE programmes at HEIs. Likewise the number of new teacher graduates (NTGs) grew from 6,978 in 2009 to 13,708 in 2012. The increase in Funza Lushaka (FL) bursaries from R100m in 2007 to over R900m in 2014 has been a major contributing factor to this growth and the demand for these bursaries is outstripping supply.
- **Limited private provision of ITE:** In 2013 most of the 115 private HEIs provided Continuing Professional Teacher Development (CPTD) courses and only a few offered ITE. However, CDE's case study of the largest provider, the Embury Institute for Teacher Education in KZN, which was bought by Curro in 2013, shows that a private provider can deliver and grow rapidly. Its success factors include focusing on niche areas, especially where the public universities are weak, such as ITE for early childhood development (ECD), the Foundation Phase (FP) (Grades R-3) and learners with special education needs (LSEN), providing high quality ITE programmes, responding to new needs, and establishing public-private partnerships.

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- **Private innovation:** Two NGOs within the private sector have developed innovative ITE models: the internship model in the Mathematics and English Programme of the Independent Schools Association of Southern Africa, and the postgraduate model of *Teach South Africa*.
- **ITE enrolment plan on track:** Despite the projected rise in learner enrolments and the consequent increase in teacher demand, the enrolment plan of the Department of Higher Education and Training (DHET) is well on track, and projections of the CDE based on the ASS show that if the number of graduates continues to increase South Africa will be able to produce sufficient teachers for the next decade to maintain the current learner to educator ratio (LER) of 29.2 learners to 1 teacher for the whole system.³

BUT

- **Uneven demand for teachers in the various school phases:** If the 13 years of schooling are split into lower primary (Grades R-3), higher primary (Grades 4-7) and secondary (Grades 8-12), by 2025 some 3 per cent fewer teachers will be needed in the lower primary section, 13 per cent more in the upper primary, and 10 per cent more in the secondary school sector. DHET's current enrolment plan does not take this uneven demand into account.
- **Serious mismatch between the current qualifications of NTGs and the need for teachers in the various phases:** In the case of the FP the shortage is particularly severe. Research conducted by DHET found that the proportion of FP graduates from 2008 to 2012, relative to teachers qualifying to teach in other school phases, is declining and the number of FP graduates is too low for the needs of that phase. On average between 2008 and 2012 FP teacher graduates were about 18 per cent of all graduates, but in 2012 learner enrolments in FP constituted 33 per cent (some 400,000 learners) of all school enrolments. Even by 2020, the researchers' projection indicates that the demand for FP teachers will largely outstrip supply.⁴
- **Worrying shortages of teachers in key subjects:** While there is an oversupply of teachers for some subjects there are significant shortages in key subjects: languages in all phases, mathematics in the Intermediate and Senior phases, and mathematical literacy in the Further Education and Training (FET) Phase. The shortage of FP new teacher graduates able to use indigenous African languages as languages of instruction is dire. Whereas in 2007 the home language of some 83 per cent of learners was an indigenous African language, of the 1,275 NTGS expected to graduate in 2009 with an FP qualification, only 13 per cent had an African language as their mother tongue. In 2012 there were not enough FP mother tongue new teacher graduates for any language group of learners.
- **Inefficient public ITE system:** Although both enrolments and graduates have increased, student progress through both contact and distance ITE programmes is poor and the outputs are very low,

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particularly in the case of the B Ed, and even more so in the case of the UNISA B Ed that many students study on a part-time basis.

The graduation rate is a proxy for the throughput rate of a programme (which is not available) and refers to the number of students who graduate from a programme in a particular year, expressed as a percentage of the total number of students enrolled in that programme in the same year.⁵ In the case of a four-year qualification with a constant intake, the maximum possible graduation rate is 25 per cent. For a one-year qualification, the maximum rate would be 100 per cent. In 2012 the ITE graduation rate for the four-year B Ed programme was 9.8 per cent, and for the one-year PGCE programme it was 46.3 per cent. In the case of the UNISA B Ed, which many students study part-time through distance education, the graduation rate drops to 2.4 per cent.

This inefficiency increases the cost of producing NTGs, and the long turnaround time between enrolment and graduation complicates planning for the required number of NTGs.

- **Problematic funding of ITE:** The main funding mechanism for public HEIs is not optimal for ITE. Currently education is in the Classification of Educational Subject Matter (CESM) Level 1 (the lowest level) of government's calculation of the components of the block grant each university receives, from which it decides how many ITE places to allocate. The B Ed and PGCE are also in the lowest category by level of higher education qualification and thus attract less funding. This has created a disincentive for the universities to allocate more money to ITE. Teaching practice, which has been identified as one of the weakest areas of ITE, is typically underfunded.
- **Unreliable data for effective modelling or planning:** As a result of data discrepancies and inadequacies, the model's projections, based on analyses of the available data for PERSAL and the ASS database, led to substantially different conclusions. The PERSAL data suggest that it may be time to think of measures designed to curb the production of teachers down the line, because by 2012 the country had already produced more than the projected requirement of 12,000 NTGs a year. By contrast, the ASS data suggest an increase in intake will be necessary in the next 10 years to produce 30,000 NTGs in 2025. Without access to the primary PERSAL database these differences could not be resolved, despite every effort to do so. However, what is clear is that South Africa is highly unlikely to have an overall shortage of teachers in the next 10 years.

Unreliable data is a fact of life for education policy-makers and planners and thwarts the early identification of problems, appropriate strategy development, effective planning and timely action.

- **Poor quality ITE:** As government's own quality assurance processes and the 2014 report by JET Education Services have revealed, there can be no doubt that in general the quality of ITE programmes has been low and most NTGs have not been adequately educated or trained.⁶ The JET research indicated that a number

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of factors negatively affect the quality of ITE: low admission criteria for entry into ITE, a lack of rigour in selection processes, deficiencies in programme coherence, content, and cognitive demand and failure to take into account the needs and realities of the education system.

The issue of low admission criteria is an important factor: in most universities the B Ed programme has lower entrance requirements than other undergraduate degree programmes, which means that weaker students are attracted to the B Ed programme. By contrast, in a country like Finland, the best students are accepted for ITE qualifications.⁷

Profile of the Teaching Corps in 2013

CDE's research produced some noteworthy and surprising findings about the current teaching force. CDE used data on 400,756⁸ teachers, who were South African citizens between the ages of 22 and 65, from the ASS to produce the following profile of the South African teaching force in 2013:

- **81 per cent qualified:** 66 per cent had an M+3 qualification and 15 per cent had an M+4.
- **19 per cent unqualified:**⁹ Some 10 per cent of teachers had the equivalent of an M+3 qualification but no professional teaching qualification, and about another 10 per cent had an M+2 or lower. KZN employs nearly a third (13,532) of all unqualified teachers in South Africa.¹⁰
- **Atypical and problematic age profile:** The age distribution is not the typical bell curve: it is bimodal like the two humps of a camel, with most teachers aged 40 to 49 years. This will create a significant problem by 2025 when this group will be 50 to 59 years old, with many in the process of retiring. The smallest number of teachers will then be 40 to 49 years old. As this is typically the group from which senior managers and principals are drawn, teachers with less experience will have to be promoted to fill these positions.
- **High teacher turnover:** There is a high degree of churning in the teaching force as teachers continually move in and out of the system. Most NTGs enter the system late at age 28. Many qualified teachers leave and fewer return, and many unqualified teachers stay and upgrade their qualifications or are new hires. The system is in fact a leaky bucket with more qualified teachers leaving than returning. This means that pumping more NTGs into the system will not in itself suffice to improve the average level of qualification of employed teachers. As a result, the percentage of unqualified teachers is unlikely to decline by 2025.
- **Significant percentage of teachers upgrading:** Between 2012 and 2013, the nearly 31 per cent of teachers who upgraded from unqualified to qualified while in employment exceeded the 22 per cent of NTGs who entered employment for the first time in 2013. This suggests that the majority of teachers build up their qualifications on the job, often over many years.

RECOMMENDATIONS

From the findings and implications of its research and modelling CDE has developed these recommendations to inform the strategies, policies and initiatives of decision-makers in the public and private sectors and the public debate.

- **Collection of more and better information:** What South Africa urgently needs is reliable data systems that are compatible across all levels of the education sector – national, provincial and district. Existing databases must be improved so that they contain accurate, comprehensive and up-to-date information. This will depend on diligent collection, recording of annual data by all government departments at every level, and careful monitoring and checking of the process. Monitoring of demographic developments and especially birth registrations will be crucial to anticipate learner enrolments and update the demand for teachers.

Access to the primary PERSAL database should be made available to reputable policy research organisations like the CDE. The confidentiality problem can be overcome through a variety of means, with a confidentiality agreement as the simplest. In the case of CDE's modelling presented in this report, it is not too late to refine the model. Access to PERSAL data for the same month as the ASS is undertaken, for two successive years, would make it possible to combine the best features of both in order to construct a single and more reliable set of estimates.

- **Strategic quantitative and qualitative research:** Additional empirical research will enable a more in-depth and authoritative diagnosis of the problems impeding the effective recruiting, training and retaining of qualified, competent and committed teachers, and how best to address them.

Examples of important issues that need investigation and that CDE was not able to research in this project include:

- The throughput rates of ITE programmes: A proper cohort study is needed to track cohorts of student teachers through the years of their studies to accurately quantify the throughput rate, and understand how blockages could be removed and the efficiency of ITE programmes be improved.
- Why teachers enter the system late, leave and do not return: Qualitative research would throw light on why there is a delayed entry of NTGs and why older qualified teachers leave temporarily or permanently.
- How teachers are utilised in the system: In schools, many teachers are not teaching the subjects or phases in which they specialised. Misutilisation of teachers undermines quality education, and the extent to which this is happening will enable a better understanding of the match between teacher supply and demand, especially in the subjects and phases in most need.

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- Whether a wider range of recognised pathways to a B Ed or PGCE teaching qualification could improve the quality, flexibility and accessibility of ITE programmes: Research is needed into international and local experience of different models, their strengths and weaknesses, and the extent to which they could be taken to scale.
- **Teacher supply aligned to school phase and subject needs:** The focus in the DHET enrolment plan for the next decade should be on supplying teachers for the phases and subjects where the need is greatest. Specific enrolment and graduation targets for phases and subjects should be established, and through the FL bursaries, the maximum financial support given to students wanting to qualify in the areas of greatest need.

Policy-makers need to take into account the dire shortage of FP teachers able to teach through the medium of an African language or teach them as subjects, before they decide to implement the proposed *Incremental Introduction of African Languages policy*.
- **Improved funding of ITE programmes:** Unless ITE qualifications are accorded higher status for university funding, it is difficult to see how the programmes will be strengthened through block grants. Where government wants to achieve specific objectives to shape and strengthen ITE, it should use more earmarked grants. In particular, funding of the teaching practice component of ITE needs attention if it is to be extended and improved.
- **Increasing the employment of qualified teachers:** Based on the findings of research into why NTGs delay their entry into the teaching force and older qualified teachers leave and return or leave permanently, government must develop strategies to encourage NTGs to join earlier, incentivise competent qualified teachers to remain in teaching, and prevent the hiring of unqualified teachers when qualified educators are available, especially in KZN.
- **Leadership and management training:** The present bimodal age distribution means that by 2025 senior management posts will have to be filled from the smallest group of teachers aged 40 to 49 years. To prepare them for this responsibility, leadership and management training, with a strong emphasis on instructional leadership, should be provided to teachers who are potential managers before they reach 40 years of age.
- **Ensuring high-quality ITE:** Improving the quality of ITE is urgent and essential. Otherwise expanding provision will only reproduce more poor quality teachers with inadequate subject and pedagogical knowledge and limited teaching experience, which leaves them ill-prepared for the challenges of classroom teaching. In particular, improving the quality of distance ITE provision is critical because more HEIs intend to offer it in the future.

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- **Targeted role for the private sector:** CDE's research for this report found that there were few market-based solutions to the need for more high-quality ITE but recently, in the case of FP programmes especially, there are indications that private provision has begun to expand. However, as the projections of the CDE model indicate that for the next decade the public HEIs will be able to provide enough graduates overall for the system's needs, the role of the private sector in future should be a strategic, targeted one.
 - Market-based private initiatives: The Embury model could be replicated by the private sector, especially to meet the demand in niche areas where the system's need is greatest: ECD, FP, languages, mathematics and mathematical literacy. The programmes that private providers offer need to be of a high quality and cost-effective with strong student support and meaningful teaching experience.

Private providers should be responsive to new and emerging demands for teacher education and develop appropriate courses, materials and programmes.
 - Public-private partnerships: One of the greatest strengths of Embury is the excellent partnerships it has formed with the Provincial Education Department, the DBE, foundations and schools. Among the other benefits accruing from these, they have enabled it to give its trainee teachers extended, meaningful practical work experience, and to develop new courses and materials with government funding.

Because private providers are able to respond quickly to areas of urgent need, government should incentivise private ITE institutions to initiate or expand programmes where the public HEIs will be hard pushed to produce enough NGTs in the near future or where new teacher education needs emerge. The provision of student bursaries would enable private providers to focus on recruiting students for these programmes. For their part, private providers should engage regularly with the national and provincial education departments around ITE priorities and needs.
 - Expertise: Government's *Operation Phakisa* will take place in the second half of 2015. The objective is to bring all the key education stakeholders together to develop detailed implementation plans that tackle education priorities and effect 'big, fast results'. The private sector should contribute its expertise to the task teams that, amongst others, will focus on developing effective data and information systems, improving the quality and efficiency of ITE, and aligning teacher supply and demand.
 - Alternative models and approaches to ITE: Both for-profit institutions and not-for-profit organisations should use the private sector's entrepreneurial nature and flexibility to be innovative. They can experiment with alternative pathways to becoming a qualified teacher, different structures for ITE provision, and a range of modes of delivery.

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- Corporate social investment: Private donors could fund strategic initiatives to strengthen ITE in public HEIs in areas where maximum impact on quality, efficiency and teacher shortages can be achieved. Ad hoc projects will not do the job.

The expansion of ITE programmes means that many more, competent teacher educators are required. Because they are central to the quality of ITE programmes, any initiative to strengthen their teaching will have a multiplier effect in terms of the added benefit to all the students they teach. On the basis of the evaluation of teacher educators' knowledge and skills, donors could fund professional development programmes for teacher educators to upgrade their competencies in areas where they are weak. An initiative could begin with UNISA, NWU and UKZN, the three public HEIs that produce most NTGs. Funders could also assist in recruiting and incentivising new high-quality teacher educators to staff the many expanded ITE programmes.

Another strategic area would be for donors to fund the research outlined above to produce the evidence needed to effectively diagnose and address critical problems in ITE as well as investigate new potentially promising initiatives to improve ITE.

Typically donors have invested heavily in CPTD for teachers in service rather than ITE. CPTD is important as nearly a fifth of the teaching force is unqualified and most lack the necessary subject and pedagogical content knowledge to teach the school curriculum effectively. Unfortunately, in the past most CPTD initiatives have achieved few, if any, positive effects on learner achievement. Evidence is emerging of promising models that have been implemented in South Africa and these should inform future CPTD efforts.¹¹

However, CDE would argue that unless we get the quality and focus of ITE provision right so that all newly qualified teachers are able to teach effectively and have specialised in the subjects and phases of greatest need, the country will not have teachers for critical subjects and will be engaged forever in remedial in-service training. Strengthening ITE is one of the most urgent and strategic national interventions needed to improve South African schooling and requires the combined resources and expertise of the public and private sectors. However, this needs to be coupled with effective teacher performance management and capacity-building through targeted professional development for the teachers in service.

CONCLUDING REMARKS

Government must be commended for turning around a severe shortage of teacher graduates in 2009, such that it is meeting its overall annual targets of new graduates. If this continues, the production of sufficient teachers for the schooling system during the next 10 years is achievable. The education departments have also taken important initial steps to improve the quality of ITE. However, as CDE's study has revealed, much

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still needs to be done to address the many challenges inherent in the composition of the teaching force, the quality of ITE provision, and teacher shortages in key phases and subjects.

Teachers are at the centre of any education system and their quality directly affects learner achievement. Unless ITE programmes prepare teachers with all the competencies needed to provide quality teaching and learning, then all the resources poured into ITE will not achieve what must be the absolutely fundamental goal of our schooling system: improved learner achievement, especially in language and mathematics.

However, high quality ITE is not a sufficient condition for improving learner achievement. Even if existing and new teachers possess all the necessary knowledge and skills, their professionalism and commitment to fulfilling their teaching responsibilities in the best interests of the learners is of paramount importance. The challenge is aptly summed up in a recent report of the National Treasury:

Above all, it is the commitment of teachers that will ensure the success of the education system: to arrive at school on time, every school day; to be prepared for each day's lessons; and to be in their classes, teaching. If the system can ensure this, better basic education and effective expenditure will be within reach.¹²

Where this commitment is found wanting and teachers are not fulfilling their responsibilities, they must be held accountable.

In conclusion, a final word about the CDE model is appropriate. It was developed in close co-operation with the national departments and other researchers whom CDE brought together for the first time to engage with the draft model and help refine it. There are only a few researchers in the country with the necessary expertise for such a complex task, and as new and better data becomes available, the group should continue its work to refine the model further. For the future this pool of skills needs to grow and more researchers, especially young African researchers with an interest in modelling, should be brought on board to learn from the group's expertise.

It is clear that CDE's study is not the last word on South Africa's teacher supply and demand challenges, but it is the first word on key aspects of the teacher supply and demand processes and the future implications of the profile of the current teaching force.

Additional research, integrating PERSAL with ASS data, would improve the reliability of the model's projections and facilitate effective planning. However, no future model could provide the various agents in the system with a precise plan of what to do. Rather, modelling should be the basis for a dialogue to create greater consensus about the best strategies for the future to produce the quality teachers South Africa needs.

This is an executive summary of a CDE Report, TEACHERS IN SOUTH AFRICA: Supply and Demand 2013–2025 (March 2015). The full-length publication can be downloaded from www.cde.org.za.

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ENDNOTES

- 1 Department of Basic Education, Department of Higher Education and Training, *Integrated Strategic Planning Framework for Teacher Education and Development in South Africa, 2011–2025* (Pretoria: DBE & DHET, 2011).
- 2 The five datasets used were:
 - The population statistics from the Spectrum database used by Statistics South Africa to project the growth in the learner population over the next 10 years;
 - The supply of teachers to the system from audited figures in DHET internal reports, Trends in Teacher Supply, for four consecutive years, 2009 to 2012;
 - The number of teachers in the system for five consecutive years, 2009 to 2013, obtained from the DBE's Education Statistics and School Realities;
 - The movement of teachers in the system from two sources of teacher information: PERSAL (the government's personnel salary database) based on a secondary analysis of two internal DBE reports, and two consecutive years (2012 and 2013) of the DBE's Annual Schools Survey (ASS) data. The ASS data contain information on educators by characteristics relevant to the analysis, notably gender, age, citizenship, qualification level, years of experience, identity of employer (whether government or a school governing board); and
 - The General Household Survey (2013) to investigate Grade R enrolments.
- 3 Because the projected learner enrolments indicate that the demand for secondary school teachers will be greater than for primary school teachers in the next decade, the projection allows for a 6 per cent per annum increase in B Ed graduates from 2020 to 2025, and an 8 per cent per annum increase in PGCE graduates.
- 4 W. Green, M. Adendorff, B. Mathebula, "Minding the gap?" A national foundation phase teacher supply-demand analysis 2012-2020; *South African Journal of Childhood Education* 4(2), 2014, 1-23.
- 5 Because there is no cohort study which would track an actual cohort of first-year students through to graduation, the graduation rate has to be used as a proxy for the throughput rate of a programme. The graduation rate is not an entirely satisfactory indicator, since the graduations in one year are actually a function of enrolments in earlier years, and is sensitive to changes in the pattern of enrolment. For instance, if in a particular year the number of enrolments dramatically increased, the graduation rate would suddenly drop.
- 6 Council on Higher Education, 'Report on the National Review of Academic and Professional Programmes in Education,' HE Monitor 11, 2010. JET Education Services, *The Initial Teacher Education Research Project: An examination of aspects of initial teacher education curricula at five higher education institutions, Progress Report* (Johannesburg: JET, 2014).
- 7 Council on Higher Education, 'Report on the National Review of Academic and Professional Programmes in Education,' HE Monitor 11, 2010.
- 8 In the case of the ASS, which is based on data entered by schools, the modelling was confined to only those teachers who had South African citizenship and were between the ages of 22 and 65 because the use of South African ID numbers was central to the methodology. As a result the population of teachers used in the ASS modelling was 400,756 teachers.
- 9 CDE has included professionally unqualified teachers in the unqualified category because they do not have a teaching qualification. Government figures tend to categorise only those with M+2 and lower qualifications as unqualified. In that case the number would decrease to about 40,000 (10 per cent).
- 10 KwaZulu-Natal has the largest learner enrolment of all the provinces and employs 22 per cent of the teachers. However, the number of unqualified teachers (13,532) it employed in 2013 is disproportionate to all the other provinces which together employed 26,264 unqualified teachers in 2013.
- 11 Eric Schollar Associates, *Epoch and Optima Trusts: Public Schools Maths Challenge Programme (An Impact Evaluation)* (Johannesburg: Tshikululu Social Investments, 2014). P. Hobden, S. Hobden, *Going to Scale: What is required for intervention projects to go to scale?* Johannesburg: Centre for Development and Enterprise, 2012).

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