



# Education and Labour Market Inequalities in South Africa

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## Abstract

Framed within notions of social justice, inequality of opportunity and Bourdieu's forms of capital, this chapter examines the gaps in educational and labour market outcomes in South Africa and how they have changed over time. With social policies aimed at redressing inequalities introduced from 1994, we track the changes in school mathematics achievements from 2003 to 2015; university graduation rates for science, engineering and health related (SET) fields from 2008 to 2017 and demographic shifts of workers in high-skill occupations from 2008 to 2018.

Multiple data sources were used for the analysis including the Trends in International Mathematics and Science Study, the Higher Education Management Information System and the Quarterly Labour Force Survey. The analysis showed that while overall school and university inequalities are decreasing, alongside improved mathematical achievements and graduation rates, access to various forms of capital continues as a strong determinant for educational success over time. There have been tangible increases in diversity by race and gender absorption of technicians and professionals, but White males continue to dominate managerial positions, resulting in narrow upward shifts for Africans and women. Despite notable improvement in educational successes, African women remain the most under-represented group at the higher occupational levels, especially in the private sector.

To achieve educational and labour market outcomes that are more just we propose an expanded framework which includes the economic and resource capital needed to address structural factors, as well as supporting the development of

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cultural and social capital for those from historically disadvantaged backgrounds so that they are better able to connect to institutions and workplaces. Educational institutions must be strengthened and inter-institutional variances decreased. The labour must be better monitored and sanctions applied for the non-achievement of equity targets. At the same time cultural changes must prevail with White—and male—privilege being acknowledged.

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## Introduction

Social and economic inequalities in South Africa have been persistent, primarily because of their deep roots in the country's legacy of racial exclusion under the regime of segregation. The Gini coefficient, which measures income inequality, is higher for South Africa than all other countries for which comparable data is available (The World Bank, 2018). The stubbornly high levels of inequality mirrors South Africa's polarised society, with a small elite, a relatively small middle class, and a large proportion of poor people<sup>1</sup> (The World Bank, 2018). Low educational attainment, characterised by poor learning conditions, experiences and outcomes, has been a contributory factor in the persistent unequal labour market outcomes observed over the last decade. This is despite the gamut of redistributive policies introduced to improve access to quality education, employability and socio-economic mobility.

The Organisation for Economic Co-operation and Development (OECD) analysed global and labour force inequalities and identified four driving forces of inequality within emerging countries: spatial divides, gaps in education, barriers to employment, and career advancement for women (OECD, 2011). Considering the strong alignment between the quality of education achieved and labour market outcomes, this chapter examines the changes in inequalities within schooling, higher education and the high-skilled labour market sectors over a 10-year period.

The democratic government has adopted a range of social policies targeted at eliminating socio-economic disadvantage, especially for previously disadvantaged groups, and evening out the significantly varied educational and labour market outcomes across society. The chapter thus also reflects on the extent to which South Africa has been able to overcome race and gender inequalities emerging from historical policies as students manoeuvre through basic and higher education systems, and eventually the labour market. The key contribution of this chapter is looking at how demographic and household conditions have changed over time to determine whether the gaps in educational and labour market outcomes are widening or narrowing. Our main analytic focus is on mathematics, as the acquisition of mathematical skills is a potential key contributor to decreasing inequality and promoting social justice. Mathematics achievement is a signal of the ability of students to participate

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<sup>1</sup>In 2015, the categorisation was 49% chronic poor, 13% transient poor, 14% vulnerable, 20% middle class and 4% elite.

as engaged citizens in society as well as giving them opportunities for higher labour market mobility.

The chapter is organised as follows: first, a review of the education and labour market policy context is provided, this is followed by an outline of the inequality of opportunity and a discussion of Bourdieu's forms of capital conceptual framework, as well as the methodological approach. Thereafter, empirical findings are detailed; and finally, conclusions are proffered.

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## The Education and Labour Market Context in South Africa

The contribution of education to improving labour market outcomes is well established in South African education and employment literature (Bhorat, Lilenstein, Lilenstein, & Oosthuizen, 2017; Branson & Leibbrandt, 2013; van der Berg & van Broekhuizen, 2012). Existing evidence shows that higher levels of education lead to better chances of employment and increased income. However, the majority of South Africans continue to have low levels of education and poor fundamental (i.e. basic numeracy and literacy) and technical skills, rendering them unemployable. This results in a workforce that is unable to participate in an economy that demands higher levels of skills. These challenges can be traced back to the discriminatory education system under colonialisation and apartheid, in which the majority of black South Africans were systematically excluded from the political system and economy (Ndimande, 2016).

The Population and Registration Act (Republic of South Africa, 1950a) categorised all South Africans by racial<sup>2</sup> categories (African, Coloured, Indian, White), making skin colour the single most important arbiter in the lives of an individual. The Bantu<sup>3</sup> Education Act (Republic of South Africa, 1954) legislated a curriculum to provide elementary skills for Africans to work in unskilled and low skilled sectors. In particular, apartheid's social engineering project withheld mathematics as a school subject for Africans. The Group Areas Act (Republic of South Africa, 1950b)<sup>4</sup> allocated the best and most fertile land to Whites, while Africans were moved to rural areas situated on land of the poorest quality, and in households without water, sanitation or electricity. The Job Reservation philosophy of the apartheid government prevented blacks from competing with Whites for skilled jobs.

The deliberate underdevelopment of black, especially African, population groups meant that the 1994 democratic government inherited one of the most unequal societies in the world. The educational and labour market effects of apartheid policies are aptly portrayed in the 2006 World Development Report which describes the

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<sup>2</sup>This chapter will use the term "population groups".

<sup>3</sup>Africans were officially called "Bantu" by the apartheid regime.

<sup>4</sup>In 1960 the South African population of 16 million was categorised into the following population group categories: 68.3% African, 19.3% White, 9.4% Coloured and 3% Indian. In 2019, the 58.7 million people were categorised as 80.7% African, 7.9% White, 8.8% Coloured and 2.6% Indian (Statistics South Africa, 2019).

living conditions and educational trajectories for two South African children born on the same day in 2000:

“Nthabiseng is black, born to a poor family in a rural area in the Eastern Cape Province, about 700 kilometers from Cape Town. Her mother had no formal schooling. Pieter is White, born to a wealthy family in Cape Town. His mother completed a college education at the nearby prestigious Stellenbosch University. On the day of their birth, Nthabiseng and Pieter could hardly be held responsible for their family circumstances: their race, their parent’s income and education, their urban or rural location, or indeed their sex. Yet statistics suggest that those predetermined background variables will make a major difference for the lives they lead. Nthabiseng is likely to be considerably poorer than Pieter throughout her life”. (The World Bank, 2006, p. 1)

The 1994 democratic state recognised the transformative power of education in general, and mathematics in particular, and as a result instituted a range of programmes to improve educational access, equity, quality and outcomes, and to support the teaching and learning of mathematics and science in schools. Apartheid legislation was repealed, facilitating equal access to all schools. More schools were built, enrolment rates increased, and curriculum reforms introduced a more relevant and responsive curriculum. Teacher qualification upgrading programmes were also introduced. Budgets and resourcing prioritised the most disadvantaged groups, and social protection policies and interventions provided relief for the poorest households and schools (e.g. social grants, free-health care, no-fee schools, school feeding programmes and scholar transport).

Yet, while there have been many successes in education since 1994, the improvement in learning outcomes has been slower than desired by both society and the economy. There are still too few students who are achieving learning outcomes that will allow them to progress successfully through the schooling system, into post-school education and training qualifications, and to access higher job levels and incomes. With the cost of tertiary education inaccessible to the majority of the population, in 1996 the government instituted the National Student Financial Aid Scheme (NSFAS) to support tertiary education students from poor and working-class families.

The racial and gender discriminatory policies of the past also continue to have far-reaching implications for labour market access and experiences. Employment is the key source of income for nearly all individuals and is the most direct method to escape poverty. Unequal access to good work opportunities alongside persistent labour market inequalities hinders poverty reduction efforts. To address the racial inequalities in the economy, the Black Economic Empowerment (BEE) Act, number 53 of 2003 (RSA, 2003),<sup>5</sup> was introduced to facilitate the redistribution of assets and opportunities to the majority of the population.<sup>6</sup> However, after 25 years of

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<sup>5</sup>Other post-1994 labour market policies include the Labour Relations Act, No. 66 of 1995, the Basic Conditions of Employment Act, No. 75 of 1997 and the Employment Equity Act, No. 55 of 1998.

<sup>6</sup>BEE Act was amended to Broad Based Black Economic Empowerment Act (BBBEE) Act in 2007, and 2015.

democracy, the ownership, management and control of the country's financial and economic resources remain largely amongst the minority White population (Wittenberg, 2016). Therefore, while there has been expansion of government's pro-poor policies aimed at improving the livelihoods of the most vulnerable, the country's complex history has had long-lasting effects on its ability to actualise pro-poor and inclusive growth (Bhorat, et al., 2017; Wittenberg, 2016). The levels of poverty, inequality and unemployment remain high, affecting the African population the most.

Persistent inequality, largely based on race, gender and social class, remains challenging for the country. Gender differences in educational and labour market experiences and outcomes in South Africa are complex, and intersect with race and socio-economic status. Gender educational inequalities are multi-dimensional, and in schools include access, performance, teacher–student relations and curriculum. Recently, Zuze and Beku (2019) found that girls tend to stay enrolled longer in school than boys, and they tend to have better educational outcomes (Department of Basic Education, 2020). This means girls are much more likely to complete secondary school and have a higher propensity to proceed to higher education. This trend continues even in the higher education system, as girls continue to outperform boys when looking at university completion rates (van Broekhuizen & Spaul, 2017); although it is suggested that girls continue to prefer qualifications and professions within the social sciences, and less in Science, Technology, Engineering and Mathematics (Reddy, Bhorat, Powell, Visser, & Arends, 2016; UNESCO, 2017). However, “female advantage in education does not translate into a female advantage in the labour market” (Spaul & Makaluza, 2019, p. 1). Mosomi (2019) found that females are less likely to participate in the labour market, and attributes this gender gap to the occupational segregation by gender, and the burden of care resulting in detachment from the labour market. While females in general remain under-represented in the labour market, African women tend to predominantly occupy unskilled employment, and remain under-represented in top management positions (Espinoza, Francis, & Valodia, 2019).

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## **Inequalities of Opportunities and Outcomes**

There is a rich South African literature documenting the low and unequal educational (Fleisch, 2008; Reddy, 2005; Reddy, van der Berg, Janse van Rensburg, & Taylor, 2012) and uneven labour market outcomes (Bhorat, et al., 2017; Case, Marshall, & Fongwa, 2018; Rogan & Reynolds, 2016) in the country. Factors that shape individual educational and employment outcomes have highlighted how race, gender, home background and socio-economic status, types of educational institution attended and geographic location continue to influence the embeddedness of inequality and inequity from basic education through to labour market participation outcomes.

Both scholarly and public debates on the topic of inequality generally distinguish between inequality of outcomes and inequality of opportunities (Brunori, Palmisano, & Peragine, 2019; Ferreira & Gignoux, 2011; García & Weiss, 2017; Ramos & Van

de Gaer, 2020; Roemer & Trannoy, 2016). While inequality of outcomes is concerned with disparities in material wealth, income, or expenditure, inequality of opportunity attributes differences to circumstances beyond individual control, such as gender, ethnicity, place of birth or family background. The advantage of the inequality of opportunity framework in understanding educational and labour market inequalities is that it recognises parts of inequality that are caused by circumstances outside individual control, and thus merit compensatory intervention; and parts of inequality generated by individual choices, talent and effort which are considered fair and should not necessarily be circumscribed (Ferreira & Gignoux, 2011; Roemer & Trannoy, 2016). Inequality is particularly persistent and problematic when it is “socially embedded” and linked to culture, language and physical appearance (Stewart, 2005). These systematic differences in opportunities on the basis of gender, race or place of birth are “morally unacceptable” and “ethically unjustifiable” (Fleurbaey, 2008; Nyokangi, 2014).

### **Role of Socio-Economic Status on Differential Education and Labour Market Outcomes**

In both developed and emerging economies, structural factors of race and gender, as well as parental wealth and educational attainment are the main determinants of their children’s educational success (The World Bank, 2018). Differences in learning achievements are generally associated with students’ socio-economic status (Correa, Gutiérrez, Lorca, & Parro, 2018; Hofmeyr, 2018) and social class characteristics (Bourdieu & Passeron, 1979). Observations show that children from poor families are less likely to start, progress or complete schooling successfully, and consequently have lower employment outcomes (Duncan et al., 2007). Disparities in cognitive and non-cognitive, literacy and numeracy skills are already evident when children enter school, and these abilities are predictive of subsequent academic performance. These achievement gaps are difficult to narrow in the years to follow (García & Weiss, 2017).

While advantages associated with an individual’s social class are expected to reduce and to disappear over time as a result of higher levels of education, studies in different countries have shown that factors such as social origin, social networks and cultural capital continue to influence labour market outcomes. Bernardi (2012) found that in Spain there is no reduction in the class premium for higher education. Roemer and Trannoy (2016) found that the likelihood of a child of a blue collar parent getting a White collar job is much lower than that of a child with a White collar parent. Granovetter (1995) argued that direct influence of parental background on children labour market success can take place through memberships in social networks, where in the United States, “it’s not what you know, but who you know” that facilitates one’s entry and mobility in the workplace. In European Union countries, Pellizzari (2010) showed that family networks significantly increase the probability of a person finding a good job.

## Role of Different Forms of Capital and Influence on Education and Labour Market Outcomes

Access to different forms of capital, defined as “the set of actually usable resources and powers” (Bourdieu, 1986, p. 118), influences life outcomes including academic and labour market success. Bourdieu has continuously argued that to fully appreciate the structure and functioning of the social world, it is important to recognise the interplay between and among multiple forms of capital (Bourdieu & Passeron, 1990). Access to a matrix of capital promotes access to resources and opportunities which, in turn, can enable or constrain an individual’s life choices as they transition through various life stages. Distinguishing between three forms of capital—economic, cultural and social—Bourdieu argues that individuals enter the educational system with an uneven set of capital endowments mirroring socio-economic positions. This carries over into the labour market, thus perpetuating and exacerbating social stratification and the reproduction of social inequalities.

*Economic capital* is related to money and may be manifested in both family income and financial wealth, finding expression in socio-economic status. Accordingly, economic capital can affect educational outcomes in that children from affluent families or backgrounds with high levels of home educational resources and opportunities can access schools perceived to offer higher quality education, in contrast to those from disadvantaged backgrounds. They also have opportunities to engage in activities outside the formal curriculum, which ultimately enhances their education and employment outcomes. *Social capital* refers to the actual or potential resources associated with durable networks, and is centred on social networks and relationships (see also Granovetter, 2005). These inherited relationships, usually developed and sustained by families, can influence access to educational institutions, training, and internship opportunities and even employment. *Cultural capital* provides people with connections to institutions, individuals, materials and economic resources. Aschaffenburg & Maas (1997, p.573) defined cultural capital as “proficiency in and familiarity with dominant cultural codes and practices, for example, linguistic styles, aesthetic preferences, styles of interaction”. The authors maintain that students from affluent families with dominant cultures have a better understanding of cultural expectations, and therefore adapt with ease to further develop the cultural skills and preferences recognised in schools (similarly in the labour markets); and hence negotiate their way through to higher educational or occupational levels.

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## Approach to the Study

Our key interest in this study is to examine the changes in inequalities within schooling, higher education and the high-skilled labour market sectors over a 10-year period. We will therefore explore inequality of opportunity in three key sectors: schools, universities and in high-skilled occupations in the labour market. We structure our empirical analyses into three parts:



Firstly, we analysed data from the Trends in International Mathematics and Science Study (TIMSS). TIMSS is a nationally representative achievement dataset at Grade 9, and provides a good indicator of the state of our education system. South Africa first participated in TIMSS in 1995, and subsequently in 1999, 2003, 2011, 2015 and 2019 (results yet to be released). Specifically, we compared mathematics achievement and the contexts within which learning occurred using the TIMSS 2003 and 2015 datasets (see Mullis, Martin, Foy, & Hooper, 2016 for details of the instruments). We identified four variables which appear in both datasets to track changes in home conditions.

Secondly, we used the Higher Education Management Information Systems (HEMIS) data to analyse the 2008 and 2017<sup>7</sup> graduation rates by population group and gender in the public university system for the Science, Engineering and Health related subject areas (called the SET<sup>8</sup> field), for which mathematical proficiency is a major requirement. We report aggregated statistics for the sector while acknowledging there are differences among universities.

Finally, we used the 2008 and 2018 Quarterly Labour Force Survey (QLFS) data from Statistics South Africa (StatsSA) to analyse absorption rates in the South African formal labour force. We focused on the demographic changes related to population groups and gender of workers in high-skilled occupations, categorised in the Organising Framework for Occupations (OFO) as Legislators, Managers and Senior Officials (abbreviated as Managers), Professionals, and Technicians and Associate Professionals (Technicians) over this 10-year period. These high-skilled categories of workers require technical expertise and knowledge, and in most cases the requirement is a tertiary educational qualification (post-Grade 12 diploma or certificate) or a university degree. Again we acknowledge the limitation of providing only aggregated data. We complement the household QLFS data with data from the Commission for Employment Equity (CEE) Reports.<sup>9</sup>

The main limitation of this study is that the question we have sought to answer would have been better answered by using a longitudinal panel dataset, spanning an individuals' journey from school to university to the labour market. In the absence of a panel dataset, we have, however, used three datasets for a cross-sectional analysis observing changes in two points, to answer the research question. The strength of our analysis is that we are able to look at the education and labour market dynamics simultaneously.

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<sup>7</sup>The most recent publicly available data.

<sup>8</sup>The USA refers to these categories as STEM fields.

<sup>9</sup>This data comes from the submission by companies on the representation and remunerations of their workforce by gender and race.



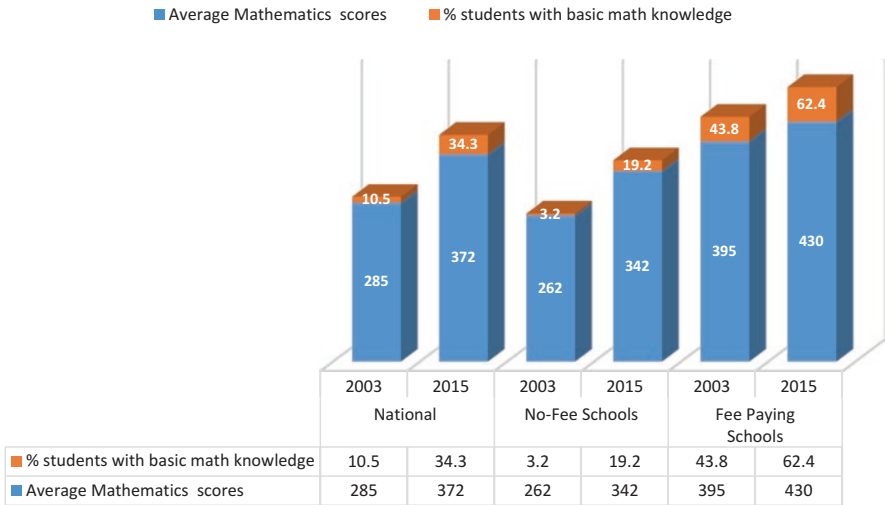
## Inequalities in Education

### Schooling and Learning

In South Africa, there have been achievement gains over the last 25 years. Since its first participation in TIMSS 1995, South Africa's mathematics performance has been ranked last or second to last of the set of participating countries. The 1995 national average mathematics achievement score of 276 TIMSS points was repeated in the TIMSS 1999 and 2003 results (Howie, 1997, 2001; Reddy, 2006). Such learning outcome stagnation was likely due to the country's focus on structural and curriculum changes in the education system, to the detriment of teaching and learning in classrooms (Reddy et al., 2012). However, achievement improved in TIMSS 2011 and again in TIMSS 2015. Between 2003 and 2015, the grade 9 mathematics scores improved by 87 TIMSS points and the national achievement score, of 372, shifted the characterisation of the educational system from *very low* to *low* performance (Zuze, Reddy, Visser, Winnaar, & Govender, 2017). Within the context of the low performance, there was no difference between the mathematics achievement of girls and boys (Mullis et al., 2016). Although this single national score provides valuable information of overall achievement, it fails to adequately reveal the textured achievement story of South Africa. There are, for example, achievement gaps in relation to student demographics, home background, as well as the types of schools attended.

While the government has tried to remove some of the barriers to access, such as fees for the majority of students, by introducing fee-paying and no-fee schools, South Africa continues to have two unequal systems of education (Fleisch, 2008; Reddy, 2006) with 70% of students attending no-fee schools. The general description of students in no-fee schools is that the majority come from lower income households, live in poorer communities, attend schools with fewer resources, and are largely taught by teachers with limited specialist knowledge. Students in fee-paying schools, on the other hand, come from largely middle class families, have better resourced homes, and attend schools with better qualified teachers and a school climate that promotes better teaching and learning. With most fee-paying schools located in affluent residential areas, no-fee schools in less affluent areas and access to schools closely linked to a student's residence, the current schooling system as it stands entrenches inequality of access (Jansen, 2019). As shown below, this goes further to affect students' educational outcomes. Using 2003 and 2015 TIMSS achievement scores, Fig. 1 captures this inequality.

As would be expected, students in fee-paying schools realised significantly higher mathematics achievement scores than those in no-fee schools in both 2003 and 2015. The average achievement score in no-fee schools, which started from a very low base in 2003, improved by 80 TIMSS points by 2015, while the improvement in fee-paying schools was 35 TIMSS points over the same period. The achievement gap between fee-paying and no-fee schools of 1.3 standard deviation in 2003 decreased to 0.9 in 2015.



Source: Authors' calculations from Grade 9 TIMSS 2003 and 2015 data

**Fig. 1** Mathematics achievement score and percent of students with basic mathematics knowledge in 2003 and 2015 for fee-paying and no-fee schools. (Source: Authors' calculations from Grade 9 TIMSS 2003 and 2015 data)

Translating mathematical scores to competences, TIMSS categorises students who score above 400 TIMSS points as having acquired basic mathematical knowledge for that grade (Mullis et al., 2016). Students who achieve scores above this benchmark are more likely to continue successfully through school, and proceed to post-school education and training qualifications (Isdale, Reddy, & Winnaar, 2018). In 2003, only one out of ten South African students had acquired basic mathematical knowledge. In 2015, there was a threefold increase, with one in three (34%) students having acquired basic mathematical knowledge (Reddy, Juan, Fongwa, & Isdale, 2019).

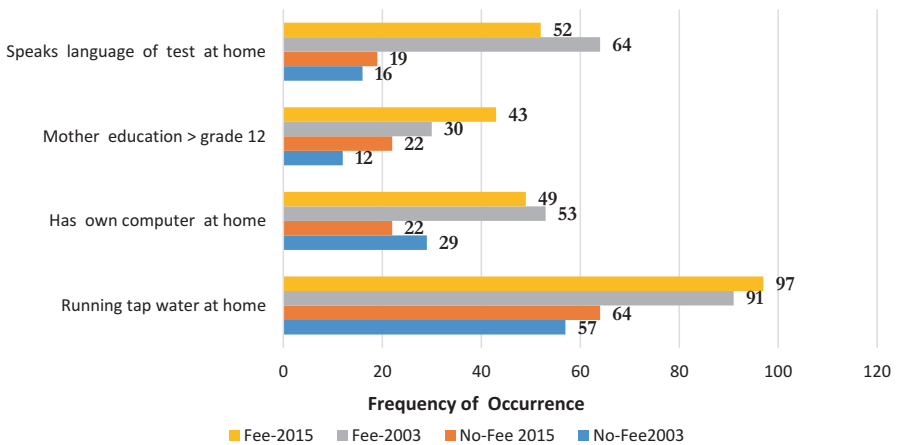
The pattern of knowledge acquisition is different in the two school types as observed in Fig. 1. In 2003, just 3.2% of students in no-fee schools, versus 43.8% of students in fee-paying schools, had acquired the basic mathematical knowledge for that grade. There was an improvement in 2015, to 19% of students in no-fee schools, versus 62% of students in fee-paying schools with basic mathematics knowledge (see Reddy et al., 2019; Zuze et al., 2017). While we acknowledge the improvement of educational quality from 2003 to 2015, it is still a concern that presently, only one-third of school students have a chance of proceeding to post-secondary education and training, and the majority of these students are from fee-paying schools.

### Home Learning Conditions in 2003 and 2015

In an equal and fair world, one’s educational outcomes would be determined by ability and effort. However, in a context of inequality, personal conditions such as where one lives influence achievement outcomes. We identified four variables, which appear in both the 2003 and 2015 TIMSS datasets, to track changes in home conditions. Figure 2 reports the changes experienced by students in fee-paying and no-fee schools for the following constructs: Home Assets (running tap water, and computer at home), which serves as a proxy for economic capital; mother’s education greater than grade 12, a proxy measure for social capital; and speaking the language of the test at home, a proxy for cultural capital.

There is a vast body of literature that shows that access to home and school resources is a predictor of achievement (Visser, Juan, & Feza, 2015). In general, the home conditions promoting learning for students improved between 2003 and 2015. Students’ access to running tap water at home is a basic human right. Over 90% of students attending fee-paying schools have these basic amenities at home. Unfortunately, for students in no-fee schools, their basic human right is violated, with only a third (36%) of these students still without access to running tap water in their homes.

In the age of technological advancement, computers are an essential home resource. While the literature does not show a direct link between access to and use of digital assets, to achievement, this variable provides an indication of socio-economic status at home, and the learning facilities students have access to. Surprisingly, access to one’s own computer at home decreased between 2003 and 2015.



Source: Authors’ calculations from TIMSS 2003 and 2015 data

**Fig. 2** Home learning conditions in fee-paying and no-fee schools, 2003 and 2015. (Source: Authors’ calculations from TIMSS 2003 and 2015 data)

Language proficiency is a determinant of learning and achievement scores (Howie, 1997; Prinsloo, Rogers, & Harvey, 2018). Language proficiency can be considered as a form of cultural capital facilitating access to the learning process. From 2003 to 2015, while the proportion of students who spoke the language of the test at home increased by three percentage points in no-fee schools, this still meant that in 2015 only one out of every five students spoke the language of the test at home. In fee-paying schools, one in two students reported speaking the language of the test at home in 2015, a decrease of 12 percentage points since 2003. The drop in the number of students speaking the test language at home can be attributed to the growth in middle class Africans who now access fee-paying schools, but continue to speak their home language, with English or Afrikaans being a second language. Despite the drop in the numbers of students who spoke the language of the test at home, the achievement scores for this group improved, pointing to the complex relationship between language and achievement in an environment as differentiated as South Africa.

The level of parental education is a strong predictor of their children's educational achievement. Over the 2003–2015 period, we observed an increase in students reporting having a mother with an education higher than grade 12, in both fee-paying and no-fee schools. Four in ten students in fee-paying schools, and two out of every ten students in no-fee schools, reported their mother's education as greater than grade 12 in 2015.

The discussion above reflects the changing inequalities in educational opportunities and outcomes. Home conditions which facilitate learning have improved slightly over the 10 years and there has been an improvement in educational outcomes. However, such gains still fall short of society's educational expectations and labour market skill needs. There are still wide achievement gaps that began with the historical conditions in the country, but still continue to this day.

Students who perform well in school mathematics (and languages) have the option to enrol at universities, especially for SET qualifications.

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## Inequalities in Universities

South Africa's 26 public universities host just over one million students. Universities are divided into three types: there are 12 traditional universities (offering theoretically oriented degrees); eight universities of technology (offering vocationally oriented diplomas and degrees); and six comprehensive universities (offering a combination of both types of qualifications).<sup>10</sup> Access to the different university types is determined by the grades achieved at the school exit examinations by students, as well as their access to financial resources. Students attending fee-paying schools have a better chance to access the more prestigious universities as they generally achieve better grades, especially in mathematics and languages, are better

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<sup>10</sup> See [https://en.wikipedia.org/wiki/List\\_of\\_universities\\_in\\_South\\_Africa](https://en.wikipedia.org/wiki/List_of_universities_in_South_Africa) for list and category of universities.

informed of university requirements, and are able to make better choices of preferred fields of study (Rogan & Reynolds, 2016).

Race, gender, social class, and sometimes geographic location, continue to be important determinants of university access, experience, education outcomes, and ultimately, labour market participation outcomes (Rogan & Reynolds, 2016). Access to university for previously excluded groups has improved: presently, 76% of the university student population is African and 59% are female (Department of Higher Education and Training, 2020). However, progression and completion rates continue to be a concern. Only one in four students in contact higher education institutions graduate in regulation time (Council for Higher Education (CHE), 2013). Furthermore, completion rates are especially low in engineering and science degrees and diplomas, all of which are mathematics dependent and have particular significance for economic development. Universities argue that students, especially black students, enter with poor quality basic education (Council for Higher Education (CHE), 2013).

Between 2008 and 2017, overall university enrolments increased by 22%, graduations by 58% and graduation rates<sup>11</sup> improved from 16 to 20%. During the same time period, there was a substantial increase in African SET enrolments (by 60% for Science, 48% for Engineering and 41% for Health) and graduations (by 115% for Science, 96% for Engineering and 71% for Health) (HEMIS). We investigated graduation rates by population groups (Fig. 3) and gender (Fig. 4), from 2008 to 2017, in the three SET subject fields.

The graduation rates for all population groups improved from 2008 to 2017, with the improvement rate for African students being the highest. The graduation rates for each of the population groups were different, with White students having the highest graduation rates and African students the lowest graduation rates in all three subject areas.

There is higher participation of women in the university sector, but the enrolment and completion data by gender show that qualification differences support gender stereotypes in the literature: males are more likely to study for more highly rewarded Science and Engineering based qualifications, whereas females focus more on health-related subjects. From 2008 to 2017, enrolments and graduations in science and engineering improved at a higher rate for females than for males: Not only are more females enrolling for SET qualifications, but the graduation rates are higher for females in Science, Engineering and Health related fields.

The increasing numbers of Black African and female graduates is encouraging, as levels of education and human capital development provide higher levels of skills and competencies, allowing access to higher level jobs in the labour market and decreasing labour market inequalities.

However, obtaining a university degree does not automatically mean a positive labour market outcome: Although labour market outcomes are to a great extent driven by education, there is still some evidence of employer bias in the selection processes. Over and above the fact that employers use qualifications as a proxy for

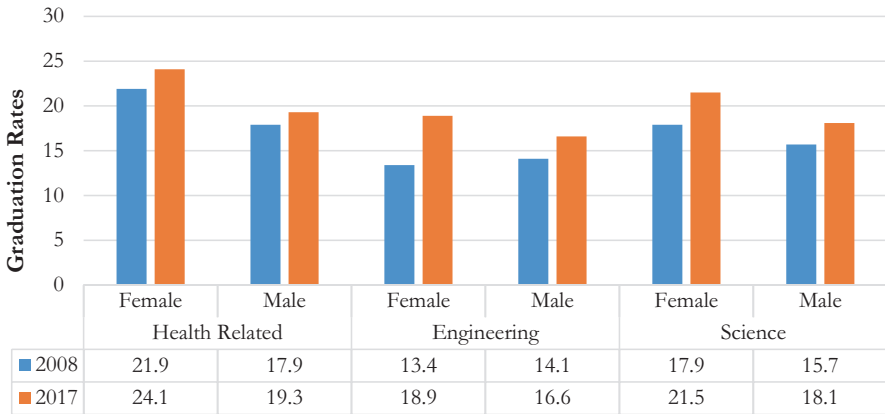
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<sup>11</sup> Using the enrolment and completion numbers we computed graduation rates.



Source: Authors' calculations based on HEMIS data, 2008 and 2017

**Fig. 3** SET graduation rates, by population groups, in 2008 and 2017. (Source: Authors' calculations based on HEMIS data, 2008 and 2017)



Source: Authors’ calculations based on HEMIS data, 2008 and 2017

**Fig. 4** SET graduation rates, by gender, in 2008 and 2017. (Source: Authors’ calculations based on HEMIS data, 2008 and 2017)

skill or ability, race and type of university attended has been found to influence the hiring process (Rogan & Reynolds, 2016). In the next section, we examine the race and gender representation of the high-skills workforce.

### Inequalities in the Labour Market

The South African economy is characterised by low (and decreasing) levels of economic growth, persistently high levels of unemployment and rising household income inequality (Bhorat, Cassim, & Hirsch, 2017). Unemployment is structural in nature in that there exist large numbers of unskilled workers alongside a skills scarcity for certain skilled labour categories (Asmal et al., 2020; Reddy et al., 2016). The consistent finding in a number of sectoral, institutional and regional studies in South Africa is that while Africans constitute more than 80% of the total population, they are still the least likely to engage in paid work. Not only do Africans have less than favourable employment outcomes, those in employment also tend to earn the lowest wages (Statistics South Africa, 2019). In addition to racial inequalities, gender is another layer of inequality, where males are not only more likely to be employed, but also occupy better paying jobs than females (Espí et al., 2019). While there is evidence showing the extent to which the South African labour markets are racialised and gender biased (Department of Planning, Monitoring, and Evaluation, 2019; Mosomi & Wittenberg, 2020), less is known about the changes over time in the high-skills sector.

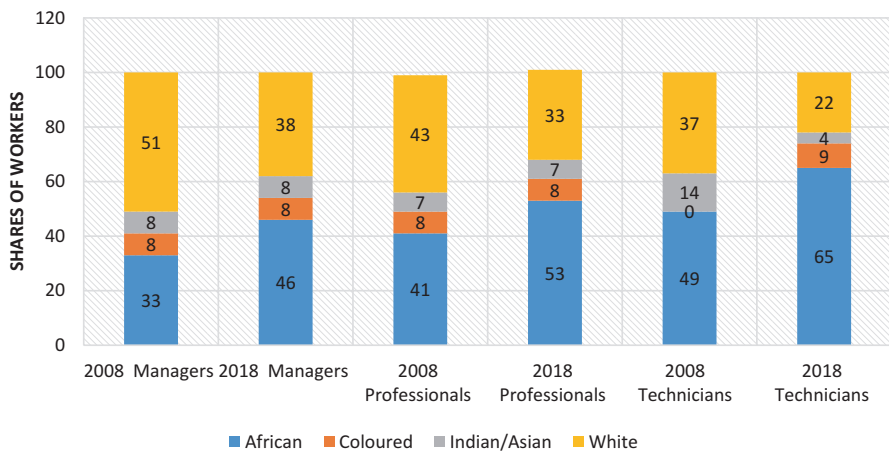


### Inequalities in High-Skills Jobs

The changing economy has a higher demand for high-skilled tertiary education graduates, especially in SET subjects. With the status and income associated with these high-skilled jobs, a race and gender based analysis of labour market absorption rates in these jobs, over a 10-year period, will provide a measure of inequality changes and transformation in the labour market. Against the backdrop of the economically active population (EAP) statistics,<sup>12</sup> Fig. 5 tracks the changes in absorption by population groups, in three high-skills job categories. The EAP for the African population is 79%, Coloured 9.8%, Indian/Asian 2.6% and White 8.8%.

Relative to their EAPs, Africans continue to be under-represented, with Whites and Indians over-represented, in these three high-skills occupations. Over the last 10 years the participation of Africans in these job categories increased by between 12 and 16 percentage points with the corresponding decrease for Whites. However, the extent of the racial inequality increases as one moves from the technician level to the more prestigious managerial jobs. In 2018, Africans occupied 65% of technician, 53% of professional, and 46% of manager jobs. The still low participation of Africans in the managerial category is a surprise as the majority of elected officials and traditional leaders are African, suggesting that the senior managers in the private sector continue to be dominated by the White population.

Further insights regarding inequalities within the manager category were gleaned by analysing the CEE data (2008 and 2018) for the top management levels of the workforce. In 2008, 72.8% of the top management was White, and this decreased by



Authors' calculations based on Stats SA QLFS data, 2008 and 2018

**Fig. 5** Absorption rates in technician, professional and manager jobs by population group, 2008 and 2018. (Authors' calculations based on Stats SA QLFS data, 2008 and 2018)

<sup>12</sup> [www.workinfo.org/index.php/articles/item/2022-national-and-regional-economically-active-population-qlfs-q4-2019](http://www.workinfo.org/index.php/articles/item/2022-national-and-regional-economically-active-population-qlfs-q4-2019)

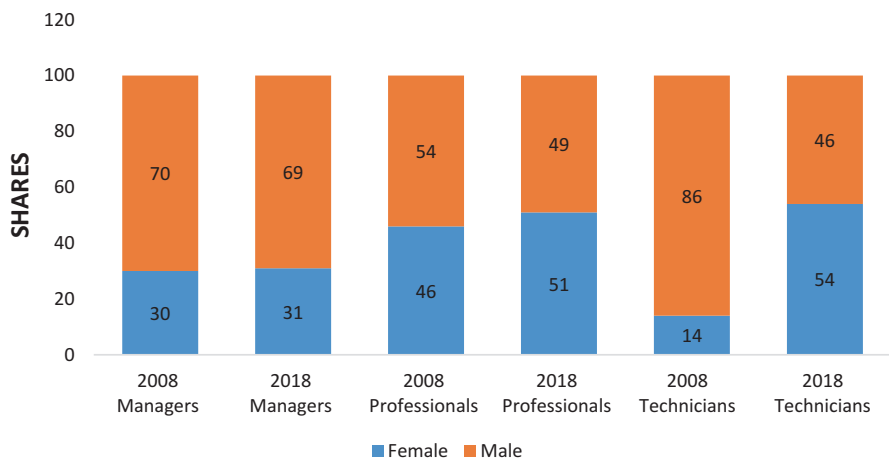
six percentage points to 66.5% in 2018 (Department of Labour, 2019). Africans, in 2018, made up 15.1% of the top management positions—a miniscule improvement of 1.5 percentage points from 2008. There are marginal moves towards increasing diversity, reducing inequalities and moving towards a more just society in the managerial positions.

Turning to changes by gender, in the three high-skills job categories, Fig. 6 shows the absorption shares by gender over time.

On the one hand, the representation of females in technician and professional jobs increased from 2008, and in 2015, relative to their EAP of 45% are over-represented. In the ‘power category’ of managers, despite persistent social and political movements for gender equity, the participation of women increased by a mere one percentage point in 10 years to 31%! This means that seven out of ten managers are male. Females are vastly under-represented in positions which wield the greatest power.

African women experience discrimination as a result of both race and gender in the workplace. Within the small group of female managers, there are further inequalities in that this group is made up of 65% White (EAP 3.8%) and 22% (EAP 36%) African women. Half of the professional women are White compared to 39% African; and the female technicians are 52% African and 35% White. While there have been gender gains, White women have benefitted the most in the top two occupational levels and African women continue to be least represented in the powerful workplace positions.

A further labour market inequality is the sector of employment. The employment patterns by race are different in the private sector and government. The biggest employer in South Africa is the private sector (73.4%), followed by national,



Authors’ calculations based on Stats SA QLFS data, 2008 and 2018

**Fig. 6** Absorption rates in technician, professional and manager jobs by gender, 2008 and 2018. (Authors’ calculations based on Stats SA QLFS data, 2008 and 2018)

provincial, and local government (14.9%); educational institutions and non-profit organisations (9%); and state owned enterprises (2.6%) (Department of Labour, 2019). In 2008, 61.3% of the top management positions in government were filled by Africans and 73.7% of such positions in the private sector were filled by Whites. There were slight changes in 2018, with three-quarters of these positions filled by Africans in government and 70% by Whites in the private sector. Clearly, while Africans hold the political power, Whites continue to hold the economic power. Neither government nor the private sector has achieved gender parity, and in 2018 only one-third of top management positions were held by women in government; and 22% in the private sector, a very slight improvement of 2% from 2008.

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## **Conclusion: Changing Educational and Labour Market Inequalities**

Twenty-five years after the end of apartheid, we examined changes and gaps in school mathematics achievement, university SET graduation rates and worker demographics in the high-skills economy in a way that is more nuanced than has been presented in previous research. While overall inequalities have decreased in both the education and labour market sector in the last 10 years, some groups in our society continue to have less favourable outcomes. We still have a way to go to achieve a fair, just and equitable society. The four key findings emerging from this analysis are as follows.

First, South African educational performance outcomes have improved, although they are still low, unequal and socially graded. Achievement gaps, though decreasing, continue to be linked to race, socio-economic backgrounds and school contexts. This confirms the well-known story that advantage begets advantage, and home disadvantages continue to school. Thus, challenges for quality learning are compounded, resulting in differentiated outcomes for children from different strata of society. With an emerging black middle class, the student race demographics in fee-paying schools has increased to 60% African students, but no-fee schools continue to teach black, largely African students. The schooling system is not offering the experiences and support to students from disadvantaged backgrounds to achieve better learning outcomes, while black students with economic resources are able to access a better quality education. The knowledge and competencies gained through schooling largely determine an individuals' future trajectory through school, post school and into the labour market, impacting on their future wages, social status and upward mobility. Therefore, social class and access to economic resources provides access to better quality learning experiences at home, and in school, and also influences one's future educational and labour market outcomes.

Second, access to universities has improved over the years as evidenced by growth in the numbers of students, particularly the African students. University participation is aligned to national race demographics, and women are now an over-represented group. University graduation rates have improved over the last 10 years, with the graduation rate gradient by race decreasing and by gender, favouring

women, increasing. African graduation rates, though showing the best improvement rate, are still the lowest of the four race groups, with White students achieving better graduation outcomes. Notably, women have higher graduation rates than men. This is, however, with the exception of Engineering, where although participation and performance is improving, women continue to be vastly under-represented in this field. The graduation rate gradient can be attributed to both schooling experiences and outcomes, and student preparedness and experiences within the university.

The third aspect of inequality is the worker demographic composition in the three high-skills occupational categories, i.e. managers, professionals and technicians who constitute the elites of the labour market. Over the 10-year period, the high-skill labour market continues to be racially skewed and gendered. There have been improvements by race, with participation in technician jobs closer to EAP for Africans, but for manager jobs equitable representation relative to the EAP still has a long way to go. There are also stark sectoral differences, where African managers are equitably represented in government positions, but White managers are vastly over-represented in the private sector. Neither government nor the private sector has achieved gender parity at the manager levels.

Lastly, historically, there have been gender inequalities with regard to access, and performance in the education and labour market sectors. A systematic response to achieve redress has been through enacting appropriate legislation. The educational outcomes (participation and performance) for females in both schools and university are better than for males. Of particular concern are African males who are now the at-risk group with higher drop-out rates, and lower performance. However, the gender story is very different in the high-skill labour market. Women have improved (with over) representation for technician and professional jobs, but are still vastly under-represented in manager, especially top management, positions. There have been miniscule changes over the last 10 years, in the powerful senior manager levels. African women, despite their educational successes remain the most under-represented group at the higher occupational levels, especially in the private sector. While there have been gender gains, White women have benefitted the most in the manager and professional occupational levels, and African women continue to be the most disadvantaged in these powerful workplace positions.

The above analyses demonstrate that education and labour market participation inequalities have decreased over the last 25 years, but the conditions of one's birth continue to determine one's educational and labour market trajectory. Pieter would continue to complete his school and tertiary education and have better opportunities to rise to managerial positions in the private sector labour market. Nthabiseng would continue to look for opportunities for a good school education and funding for tertiary education, and will still have difficulty accessing the private sector labour market.

Thus, the journey for equitable and just educational and labour market outcomes continues. In a fair and just society, opportunities to receive an education, have a good job, and earn sufficient income should not be limited by a person's gender, race, class, place of birth or parental background. While the state has introduced social protection policies in order to improve general home and school conditions,

as well as regulations and policies to promote equity in the labour market, achieving higher educational levels and a transformed private sector labour market is more difficult and elusive. As South Africa leap frogs to the next phase of development, where growing technological and digital advancements, as well as the Covid-19 health pandemic, will exacerbate inequalities, there is a need to expand our conceptual frameworks to achieve social justice goals. Revisiting the theoretical constructs that recognise the significant role of the three capital types—economic, cultural, and social—could offer new insights and ways of thinking about the challenges of inequality. We need to expand the discourse from the one which promotes economic and resource capital needed to equalise structural conditions, to an ecosystem approach which recognises the contribution of cultural and social capital to address education and labour market inequalities and promote social justice.

Although South African educational achievements are improving at a higher rate than other countries, the very low educational starting point in 1994 and the increasing labour market demand for high skills means that the schooling system will continue to be a binding constraint. Improving a school system which starts at a very low and unequal achievement level is an enormous challenge as, in general, students at lower levels of SES (and educational achievements) perform better in education systems with lower levels of inequality than their counterparts in countries with more significant SES differences (Ornstein, 2010 in Broer, Bai, & Fonseca, 2019). In light of this, with the majority of schools categorised as ‘no-fee schools’, there is a need for different models to support schools to improve their educational inputs, engagements and interactions.

In order to improve educational levels, the state must continue with intentional and targeted programmes aimed at decreasing the inequality of opportunities through interventions targeted at improving home and school conditions. In addition to injecting economic capital, i.e. in the form of resources and social protections, it is important that we also strengthen social and cultural capital assets. Addressing educational inequalities requires a multipronged approach which includes parents, students, teachers and educational leadership to improve educational quality. Such an approach should focus on building the school as an institution with better infrastructure, stronger leadership, more conducive learning environments, and a culture of valuing education and learning. In addition to having physical resources, principals, teachers and students should focus on instilling a vibrant learning culture within schools. Teachers and students should be in school on time, available resources should be used optimally, and all learning actors need to assume personal responsibility and accountability.

Students from no-fee schools who meet the academic criteria to enter universities had to overcome many obstacles. Universities need a greater awareness of how existing cultural capital and institutional practices enhance or constrain participation and success for students from different backgrounds. Universities must set up support mechanisms for at-risk students and strive to decrease the graduation gradient for the race, gender and class groups. At both school and universities, African males are most at risk for dropping out and achieving lower academic outcomes. Policies should explicitly focus on this group.

The labour market inequalities are structural in nature. In order to reduce inequalities, there must be closer monitoring of how the equity regulations and policies are implemented in the private sector labour market. We also need programmes which support the development of cultural and social capital for those from historical disadvantaged backgrounds so that they could better access connections to institutions and workplaces. The labour market needs to recognise and acknowledge how White and male privilege is a barrier to achieving social justice. The powerful and entrenched social and cultural practices which contribute to maintaining this inequality need to be exposed and acknowledged by the groups in power.

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